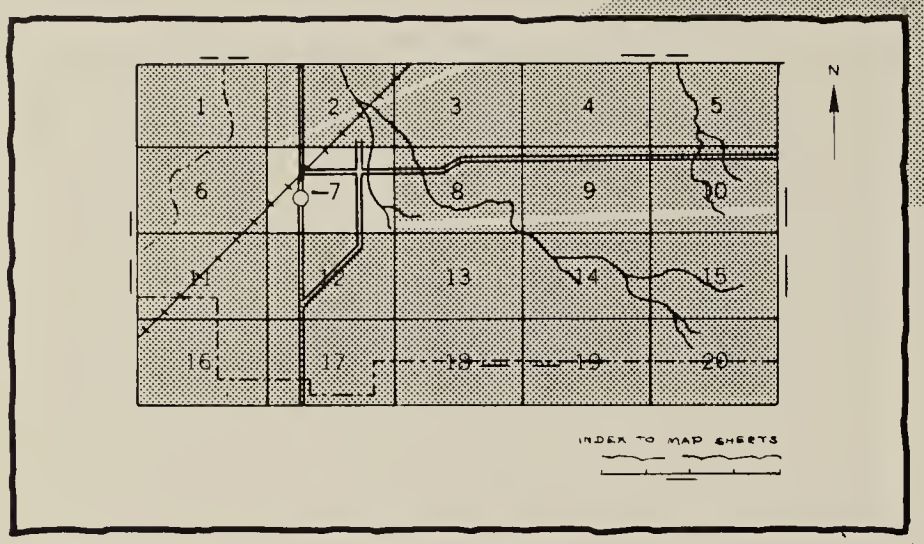
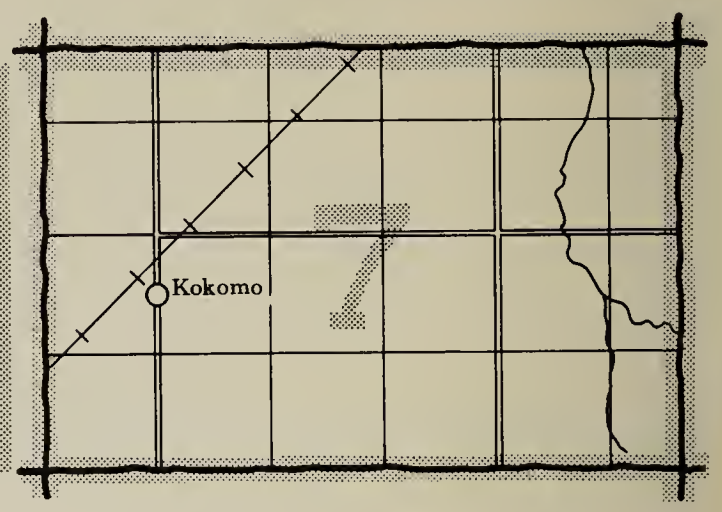
SOIL SURVEY OF
POWER COUNTY AREA, IDAHO

United States Department of Agriculture
Soil Conservation Service
in cooperation with
University of Idaho, College of Agriculture
Idaho Agricultural Experiment Station
United States Department of the Interior
Bureau of Land Management and
Idaho State Soil Conservation Commission

HOW TO USE

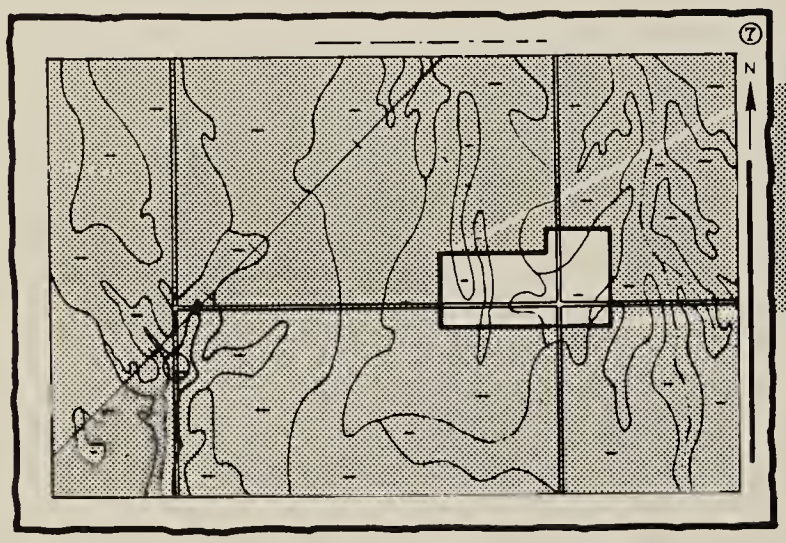
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

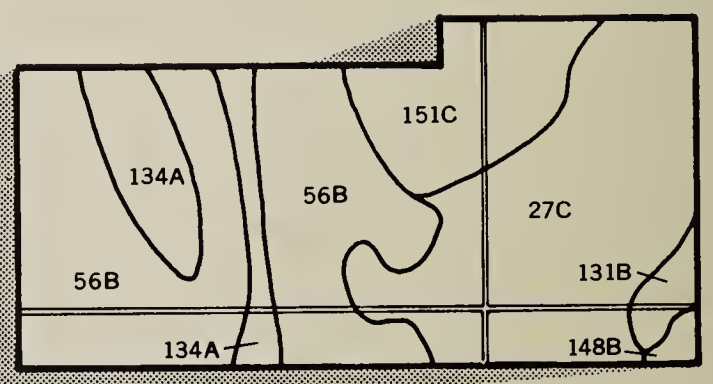




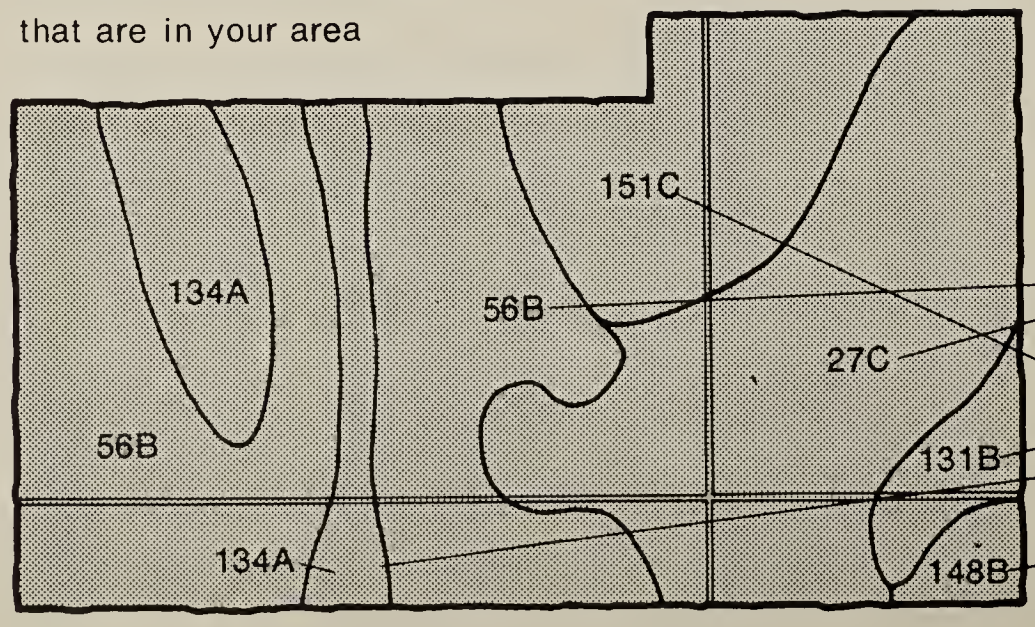
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.





4. List the map unit symbols that are in your area

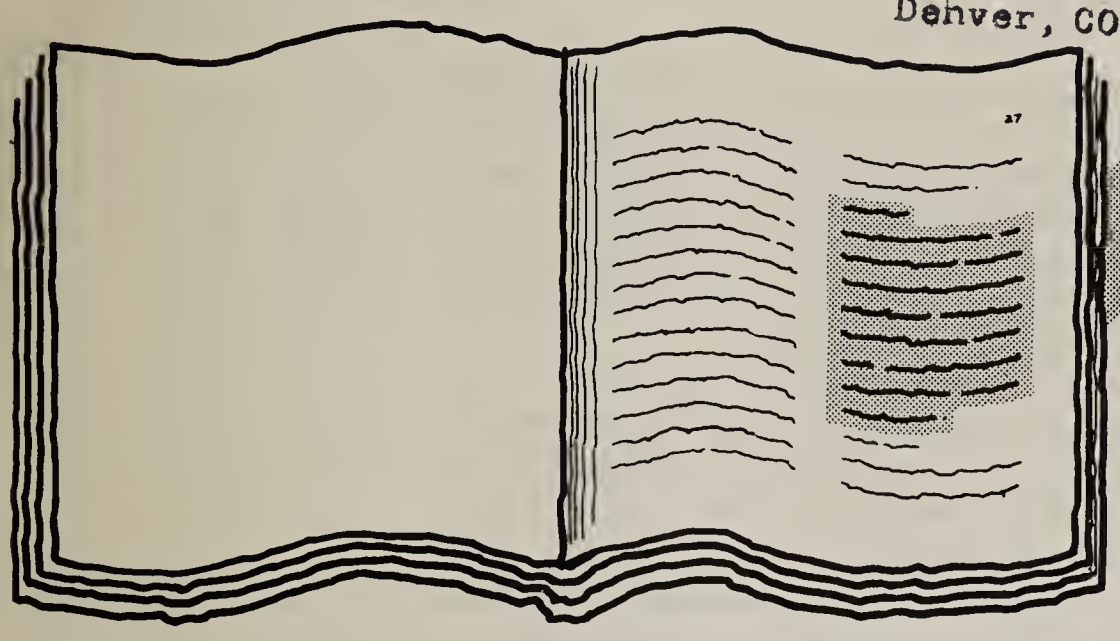


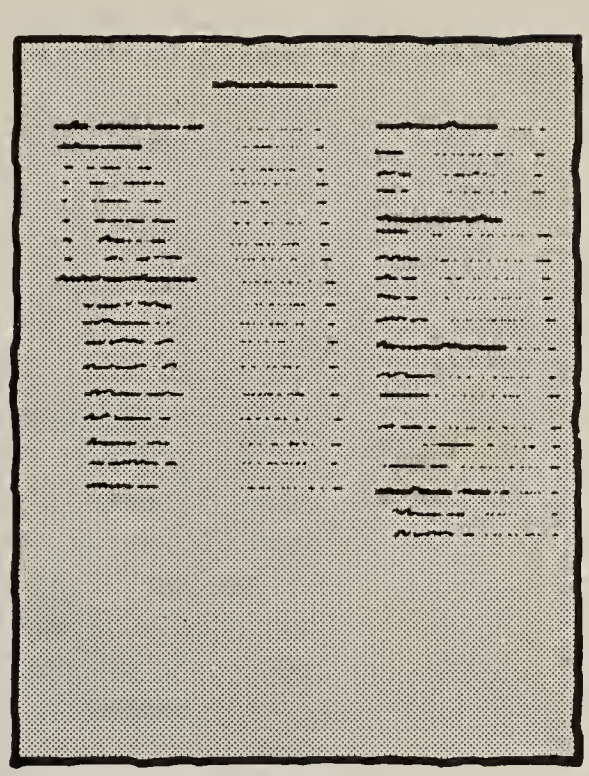
Symbols

27C
56B
131B
134A
148B
151C

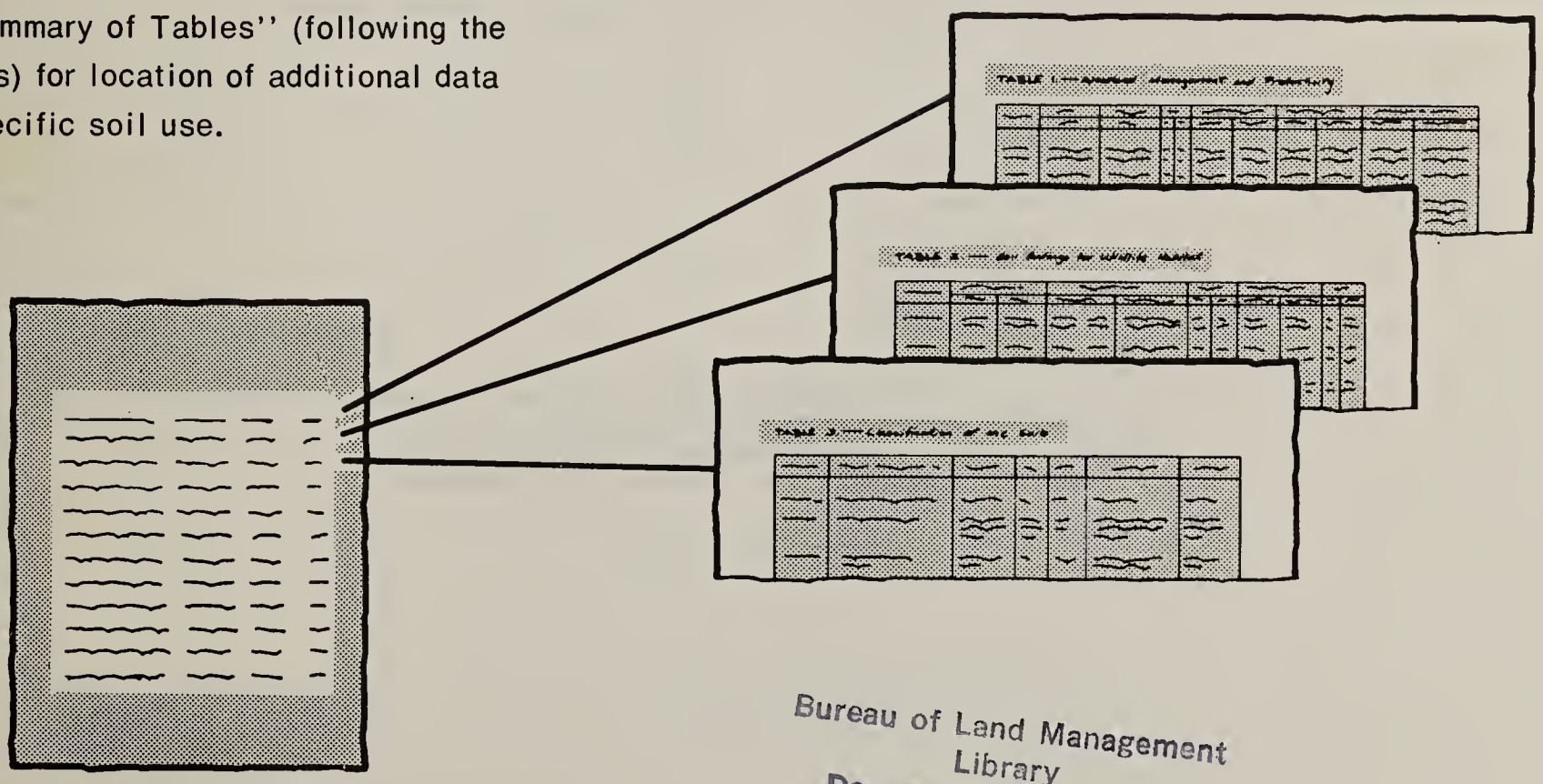
THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.





6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; for specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in 1975. Soil names and descriptions were approved in 1976. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1976. This survey was made cooperatively by the Soil Conservation Service and the University of Idaho, College of Agriculture; the Idaho Agricultural Experiment Station; the United States Department of the Interior, Bureau of Land Management; and the Idaho State Soil Conservation Commission. It is part of the technical assistance furnished to the Power Soil and Water Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps can cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

Cover: The Snake River at Massacre Rocks State Park, an historic landmark along the Oregon Trail. The steep slopes along the river are Rock outcrop and Torriorthents. The Kecko-Clems-Vining association, undulating, is on the plain in the background.

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Issued February 1981

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Summary of tables—Continued

The Soil Survey of Power County Area, Idaho, contains much information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

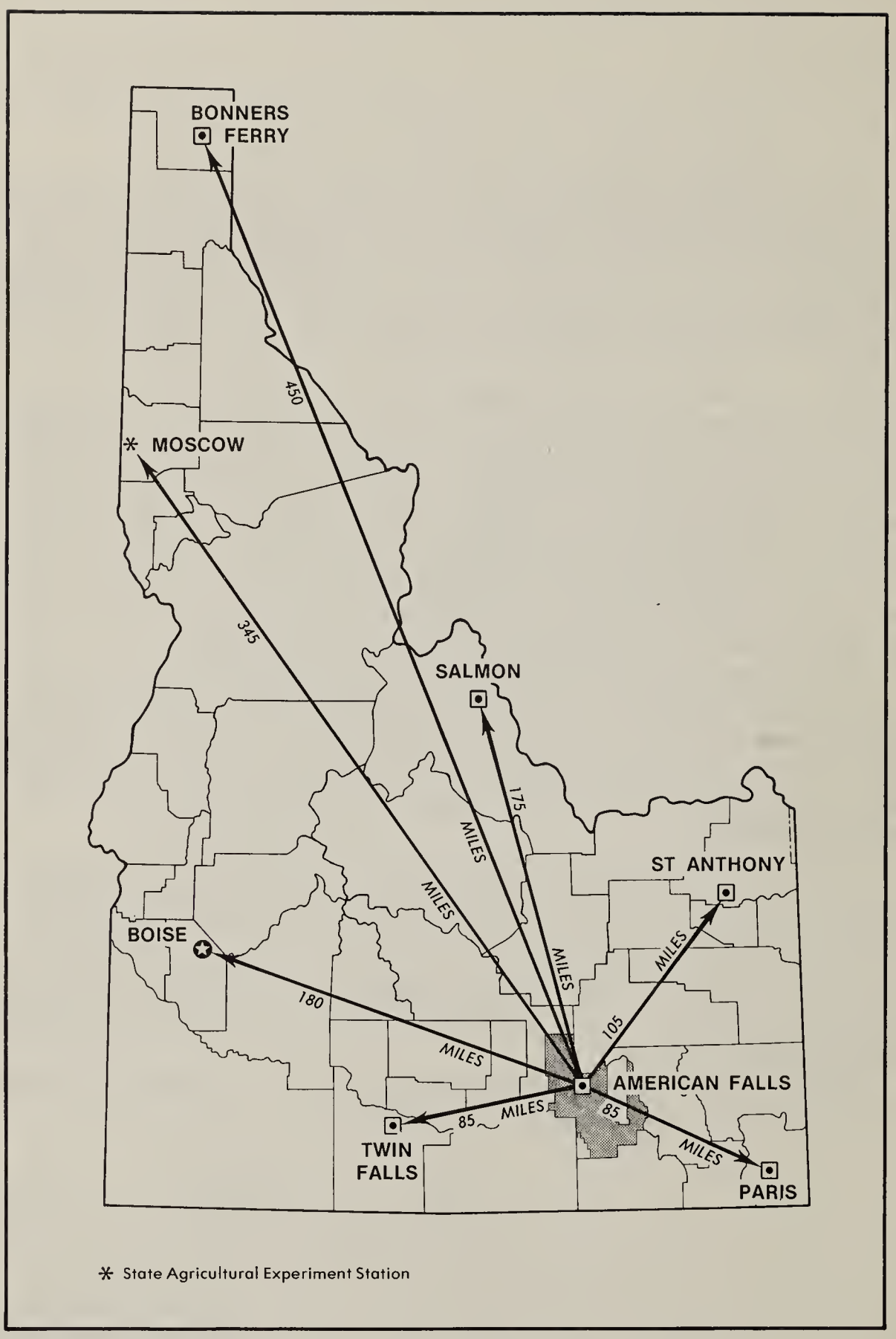
This soil survey has been prepared for many different users. Farmers, ranchers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur even within short distances. Soils may be seasonally wet or subject to flooding. They may be shallow to bedrock. They may be too unstable to be used as a foundation for buildings or roads. Very clayey or wet soils are poorly suited to septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map; the location of each kind of soil is shown on detailed soil maps. Each kind of soil in the survey area is described, and much information is given about each soil for specific uses. Additional information or assistance in using this publication can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

This soil survey can be useful in the conservation, development, and productive use of soil, water, and other resources.

Amos I. Garrison, Jr.
State Conservationist
Soil Conservation Service



Location of Power County Area in Idaho.

SOIL SURVEY OF POWER COUNTY AREA, IDAHO

By Harold W. Biggerstaff, Soil Conservation Service, and Chad L. McGrath, Idaho State Soil Conservation Commission

Fieldwork by Harold W. Biggerstaff, R. A. Salzmann, W. G. Perrin, Paul Pickering, and Chad L. McGrath

United States Department of Agriculture, Soil Conservation Service, in cooperation with
University of Idaho, College of Agriculture; Idaho Agricultural Experiment Station;
United States Department of the Interior, Bureau of Land Management; and
Idaho State Soil Conservation Commission

POWER COUNTY is in the southeastern part of Idaho. American Falls, the county seat and largest city, has a population of 3,404. The total area in the county is 1,411 square miles, or 903,040 acres, and in the survey area 1,090 square miles, or 697,430 acres. About 87,000 acres is irrigated. About 200,000 acres is dryland. The rest is mostly rangeland.

Elevation ranges from about 4,250 feet at Minidoka Migratory Waterfowl Refuge to 8,675 feet on Bannock Range and the Deep Creek Mountains. In most of the Area, however, elevation is no more than 6,000 feet.

About a third of the Area, north of the Snake River, consists of lava flows and a thin mantle of soil. The rest is mainly mountain ranges and valleys in which material has been deposited by wind, water, and gravity. The valley floors are buried under sediment from adjacent mountains. Over the sediment is a mantle of loess. The Snake River flood plain extends from the dam at American Falls west to the county line.

Idaho became a State in 1890. Power County was organized in 1913 from parts of Bingham, Blaine, Cassia, and Oneida Counties. The population, according to the 1970 census, was 4,864. Since 1970, it has increased to approximately 5,300.

American Falls, once described as 'Little Niagara,' is now the site of a prosperous farming community. Rockland is the other incorporated community. Unincorporated communities are Arbon, Neeley, and Pauline.

The survey area is one of agriculture and related industries. The economy will probably continue to be based on farming, ranching, and related industry.

Settlement and development

In the early days the town of American Falls consisted of two communities divided by railroad tracks. After the dam was built across the Snake River a few yards upstream from the falls, the resulting reservoir completely inundated the western part of the original town site. The only visible remnant is a concrete grain elevator still standing in the reservoir. The American Falls Dam was completed in 1927.

The first farm in Rockland Valley was established in 1879. Early dryland farmers in the valley were unexpectedly successful, and by 1915 the population of Rockland had risen to nearly 800.

Arbon Valley, part of the Fort Hall Indian Reservation until 1889, was opened for settlement in 1892. It was first used as summer rangeland for cattle. The valley is now a prime wheat-producing area.

Neeley was recognized as a prime homesteading region as early as 1879. Wild game and fish were plentiful. Natural warm water from Indian Springs was ideal for wintering cattle and sheep. Neeley is now the site of the Indian Springs Natatorium. As American Falls continued to grow, the Neeley settlement declined.

Gold mining along the Snake River was an early activity in the county. Mary's Mine, across the river from Neeley, and Bonanza Bar, a few miles south, operated from 1901 to 1906.

After construction of the wagon bridge across the Snake River in the early 1900's, the Pleasant Valley country west of American Falls was opened to homesteading. Before this date, the only people interested in Pleasant Valley were cattlemen, sheepherders, and an

occasional hermit like Lava Jack, who spent his days hunting bobcats and coyotes and digging for gold. Electricity finally reached the valley in 1947. With the addition of deep wells and sprinkler pipes, Pleasant Valley became the heart of the Idaho potato country.

Farming and natural resources

The first settlers in Power County were cattle and sheep ranchers. Farming became important when the land was opened to homesteaders.

Soil is a major natural resource in the survey area. The soil throughout most of the arable land in the Area provides an excellent medium for crop growth.

Water is adequate for domestic and livestock use on farms and ranches in most of the county. Irrigation water is provided by the American Falls Reservoir and the Snake River for both the Falls Irrigation District and the Aberdeen-Springfield Irrigation District. The supply is supplemented by a number of deep wells. Much of the increase in irrigated acreage in recent years has been the result of the water available from deep wells. On the Snake River Plain, deep wells in the aquifer provide much of the water. Except in rare years, water has always been adequate and no natural disasters have deterred farming.

Because of the sparse rainfall north and west of the Snake River, irrigation is needed for successful farming. Higher rainfall and deep fertile soils make the Arbon and Rockland Valleys prime dryland wheat-growing areas. In recent years, however, a significant acreage in the Rockland Valley has been brought under irrigation through water supplied by Rock Creek and by deep wells. Pleasant Valley is the prime potato-producing area. Most irrigated land in the survey area is below 4,500 feet in elevation. Most of the dryfarmed cropland is below 5,500 feet.

Completion of the railroad through American Falls in 1903 greatly facilitated shipping farm products to market. The railroad and wagon bridge over the Snake River provided a needed crossing for the area.

Enactment of Soil Conservation District legislation in 1937 gave landowners an opportunity to form organizations through which to solve their mutual problems. Formed in May 1948, the Power Soil and Water Conservation District was organized to help farmers use irrigation water more efficiently, control soil blowing on the sandy soils, and control soil erosion on steeper soils.

In the Power County Area, the climate and the soils, if irrigated, are suited to a variety of crops, including Irish potatoes, small grain, sugar beets, alfalfa, and pasture. Much of the acreage is dryfarmed wheat and barley. Some corn is grown for silage. Considerations that can limit crop production and that require special attention are the short growing season, the scant precipitation in the southern part of the county, soil blowing, water erosion, and the need for careful management of available water.

Large areas in the county are rangeland. Water is available for livestock on most rangeland. In mountainous areas, water for livestock is available from development of springs, from numerous small streams, and from wells. On the Snake River Plain, in the northern part of the survey area, water is much more difficult to obtain. Because of the lack of surface sources, all water for livestock on rangeland must come from wells. An adequate supply is available if the wells are deep.

Water is available in adequate quantity and quality for present and expected municipal, industrial, and residential uses. Future irrigation development will depend primarily on deep wells.

Climate

The Rocky Mountains partly shield Power County from strong arctic winds. Winters, though cold, generally are not too severe. In summer, winds from the Pacific Ocean are partly blocked. Days are hot, but nights are fairly cool. Except in mountainous areas, precipitation is scant in summer but in many places is adequate during the cooler parts of the year for dryfarmed small grain or for rangeland. The snowpack accumulation at high elevations supplies irrigation water for intensive farming in parts of the lowland.

Table 1 gives data on temperature and precipitation for the survey area, as recorded at American Falls for the period 1951 to 1973. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 28 degrees F, and the average daily minimum temperature is 19 degrees. The lowest temperature on record, which occurred at American Falls on January 22, 1962, is -31 degrees. In summer the average temperature is 67 degrees, and the average daily maximum temperature is 83 degrees. The highest recorded temperature, which occurred on July 10, 1956, is 100 degrees.

Growing degree days, shown in table 1, are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 5 inches, or 50 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 4 inches. The heaviest 1-day rainfall during the period of record was 1.34 inches at American Falls on December 23, 1964. Thunderstorms number about 24 each year, 16 of which occur in summer.

Average seasonal snowfall is 30 inches. The greatest snow depth at any one time during the period of record was 13 inches. On the average, 14 days have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year. Every few years a blizzard with high winds and drifting snow strikes the survey area. Even at low elevations, snow remains on the ground for many weeks. Such storms are hazardous to livestock.

The average relative humidity in midafternoon is about 40 percent. Humidity is higher at night, and the average at dawn is about 70 percent. The percentage of possible sunshine is 80 in summer and 40 in winter. The prevailing wind is from the southwest. Average windspeed is highest, 12 miles per hour, in April.

How this survey was made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied, and they compared those profiles with others in counties nearby and in places more distant. Thus, through correlation, they classified and named the soils according to nationwide, uniform procedures.

After a guide for classifying and naming the soils was worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, roads, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called soil map units. Some map units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Map units are discussed in the sections "General soil map for broad land use planning" and "Soil maps for detailed planning."

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations of their behavior are modified as necessary during the course of the survey. New interpretations are added to meet local needs, mainly through field observations of different kinds of soil in different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it is readily available to different groups of users, among them farmers, managers of rangeland and woodland, engineers, planners, developers and builders, homebuyers, and those seeking recreation.

General soil map for broad land use planning

The general soil map at the back of this publication shows, in color, map units that have a distinct pattern of soils and of relief and drainage. Each map unit is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map provides a broad perspective of the soils and landscapes in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land use. Areas that are, for the most part, suited to certain kinds of farming or to other land uses can be identified on the map. Likewise, areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

Because of its small scale, the map does not show the kind of soil at a specific site. Thus, it is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The kinds of soil in any one map unit differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management. The soils in the survey area vary widely in their potential for major land uses.

Nearly level to very steep, well drained soils on hills, terraces, plains, and ridges

The map units in this group are south of the Snake River, in the southern part of the survey area. Elevations range from 4,300 to 6,500 feet. The average annual precipitation is about 11 to 16 inches. The average

annual soil temperature ranges from 45 to 50 degrees F. The frost-free season is 75 to 140 days.

Most of the acreage is dryfarmed. A few areas are used for irrigated crops and pasture. The rest is used as rangeland and wildlife habitat.

The three units in this group make up about 39 percent of the survey area.

1. Neeley-Wheeler-Pocatello

Very deep, nearly level to very steep, well drained soils that formed in thick loess; on hills and terraces

This map unit occurs mainly as a band 6 to 12 miles wide across the central part of the survey area south of the Snake River and parallel with the river. It makes up about 14 percent of the survey area. It is about 55 percent Neeley soils, 20 percent Wheeler soils, 15 percent Pocatello soils, and 10 percent soils of minor extent.

Neeley, Wheeler, and Pocatello soils are very deep silt loams. Neeley soils are slightly darker colored than Pocatello or Wheeler soils, are generally slightly higher in elevation, and receive more effective moisture. Wheeler soils are generally on the south or west aspects.

Minor in this unit are the well drained Kucera soils on steep and very steep northerly slopes and the well drained McDole soils and somewhat poorly drained Parehat soils along drainageways.

This unit is used mainly for cultivated crops. Where irrigation water is available, alfalfa, small grain, sugar beets, potatoes, and improved pasture are important crops. Dryfarmed areas are used for small grain. Areas that are not cultivated are used mainly for range and wildlife habitat.

Where irrigation water is available and slopes are not a limiting factor, the potential is good for irrigated farming. The potential is good for residential use in areas where the slope and erosion limitations can be overcome. In most places, these limitations can be overcome through proper planning. The potential is good for development of openland and rangeland wildlife habitat.

2. Newdale-Wheelerville

Very deep, nearly level to very steep, well drained soils that formed in thick loess; on plains and terraces

This map unit is mainly in the Rockland and Arbon Valleys and on the adjacent foothills. It makes up about 17 percent of the survey area. It is about 65 percent Newdale soils, 20 percent Wheelerville soils, and 15 percent Rexburg and other soils of minor extent.

Newdale and Wheelerville soils are very deep silt loams. Newdale soils have a dark colored surface layer. They are on plains. Wheelerville soils have a light colored, calcareous surface layer. They are on the south or west slopes of plains and terraces and on knobs.

Minor in this unit are Arbone, Arbone variant, Lanoak, and Rexburg soils.

This unit is almost entirely dryfarmed. Wheat and barley are the chief crops. Areas that are not cultivated are used as range and wildlife habitat.

This unit produces good small grain crops. The variety of farm crops that can be grown is severely limited by the low precipitation, the relatively short growing season, and the colder soil temperature. The potential is good for residential use in areas where the slope and erosion limitations can be overcome. In most places, these limitations can be overcome through proper planning. The potential is fair to poor for development of openland and rangeland wildlife habitat.

3. Newdale-Rexburg-Lanoak

Very deep, nearly level to very steep, well drained soils that formed in thick loess; on hills, ridges, and plains

This map unit is mainly on foothills of the Sublette and Bannock Ranges and Deep Creek Mountains. It makes up about 8 percent of the survey area. It is about 40 percent Newdale soils, 35 percent Rexburg soils, 20 percent Lanoak soils, and 5 percent soils of minor extent.

In most places, Newdale soils are slightly lower in elevation than Rexburg and Lanoak soils. Newdale soils are on plains. Rexburg and Lanoak soils are on hills and ridges. Rexburg soils have a darker and thicker surface layer than Newdale soils. Lanoak soils have a very thick, dark colored surface layer. All are very deep silt loams.

Minor in this unit are Hondoho, Wahtigup, Ricrest, and Wheelerville soils.

This unit is used mainly for dryfarmed crops, chiefly wheat and barley. Areas that are not cultivated are used as range, wildlife habitat, and watershed.

This unit produces good small grain crops. The variety of farm crops that can be grown is limited by the short growing season and the cold soil temperature. The potential is good for residential use in areas where the slope and erosion limitations can be overcome. In most places, these limitations can be overcome through proper planning. The potential is good for development of openland and rangeland wildlife habitat.

Nearly level and very gently sloping, well drained and somewhat poorly drained soils on alluvial fans, foot slopes, and bottom land

The one map unit in this group is on bottom land and adjacent fans and foot slopes along and near Rock Creek and Bannock Creek in the southern part of the survey area. Elevations range from 4,200 to 6,200 feet. The average annual precipitation is about 12 to 14

inches. The average annual soil temperature is about 45 degrees F. The frost-free season is 85 to 126 days.

Most of the acreage is dryfarmed. Some areas are used for irrigated crops. The rest of the acreage is used as rangeland and wildlife habitat.

This unit makes up about 2 percent of the survey area.

4. Ammon-Zunhall

Very deep, nearly level and very gently sloping, well drained and somewhat poorly drained soils that formed in alluvium; on alluvial fans, foot slopes, and bottom land

This map unit is mainly along and near Rock Creek in the Rockland Valley and Bannock Creek in the Arbon Valley. It makes up about 2 percent of the survey area. It is about 55 percent Ammon soils, 40 percent Zunhall soils, and 5 percent soils of minor extent.

Ammon soils, on alluvial fans and foot slopes, are well drained. Zunhall soils, on bottom land and low alluvial fans, are somewhat poorly drained. They have a seasonal high water table.

Minor in this unit are the well drained Arbone variant, Arbone, Newdale, and Rexburg soils. Also included are limited areas of poorly drained and very poorly drained soils.

This unit is mainly dryfarmed. Wheat and barley are the chief crops. Areas that are not cultivated are used as range and wildlife habitat. There are some marshy poorly drained areas. Flooding and, in places, wetness are the main limitations for farming and most other uses.

In areas that are adequately drained and where flooding is rare, the potential is good for cultivated crops. Flooding and wetness severely limit the potential for residential use. The potential is fair to good for development of openland and rangeland wildlife habitat.

Steep and very steep, well drained soils on mountain ridges and foot slopes

The map units in this group are on foot slopes of the Sublette Range and on ridges and foot slopes in the Deep Creek Mountains and Bannock Range. Elevations range from 4,800 to nearly 9,000 feet. The average annual precipitation is about 12 to 20 inches. The average annual soil temperature ranges from 40 to 45 degrees F. Frost may occur at any time at the higher elevations. There may be up to 110 frost-free days at the lower elevations.

The acreage is used almost entirely for rangeland, wildlife habitat, recreation, and watershed.

The two units in this group make up about 20 percent of the survey area.

5. Ridgecrest-Pavohroo-Ricrest

Moderately deep to very deep, steep and very steep, well drained soils that formed in residuum and colluvium derived from limestone; on mountain ridges and foot slopes

This map unit is mainly on the Bannock Range, the Deep Creek Mountains, and the Sublette Range. It makes up about 17 percent of the survey area. It is about 20 percent Ridgecrest soils, 15 percent Pavohroo soils, 15 percent Ricrest soils, 10 percent Sheege soils, 5 percent Hymas soils, 5 percent Wahtigup soils, 5 percent Moohoo soils, and 25 percent soils of minor extent.

Ridgecrest soils have a stony loam surface layer and are 20 to 40 inches deep over limestone bedrock. Pavohroo soils have a stony loam surface layer and are 40 to 60 inches deep over limestone. Ricrest soils have a loam surface layer and are more than 60 inches deep. Sheege and Hymas soils have an extremely stony loam surface layer and are only 10 to 20 inches deep over limestone. Wahtigup soils have a gravelly loam surface layer and are 40 to 60 inches deep over limestone. Moohoo soils have a gravelly loam surface layer and are 40 to 60 inches deep over quartzite or sandstone. All of these soils are well drained.

Of minor extent are the deep Dranyon soils; the very deep Manila soils; and soils that are similar to Wahtigup, Hymas, Sheege, and Ridgecrest soils but are associated with quartzite and sandstone. Also of minor extent are areas of rock outcrop.

This unit is used mainly as rangeland and watershed. The steep slopes, the varying depth, and the stoniness are the main limitations for farming and most other uses. The short growing season is also a severe limitation in farming.

The potential is good for development of rangeland and woodland wildlife habitat. It is also good for recreational development in selected areas.

6. Wahtigup-Hondoho

Very deep, steep and very steep, well drained soils that formed in colluvium and residuum derived from quartzite and sandstone; on mountain foot slopes

This map unit (fig. 1) is mainly on foot slopes of the Sublette and Bannock Ranges and the Deep Creek Mountains. It makes up about 4 percent of the survey area. It is about 45 percent Wahtigup soils, 35 percent Hondoho soils, and 20 percent soils of minor extent.

Wahtigup soils generally have a gravelly loam surface layer and are less than 35 percent coarse fragments between depths of 10 and 40 inches. Hondoho soils have a cobbly or very cobbly loam surface layer and are more than 35 percent coarse fragments between depths of 10 and 40 inches.

Minor in this unit are the shallow extremely stony Hymas soils, the moderately deep stony Ridgecrest soils, and the very deep Ricrest, Lanoak, and Rexburg soils.

This unit is used mainly as rangeland and watershed. The gravelly, cobbly, and very cobbly surface layer and the steep slopes are the main limitations in farming.

The potential is good for rangeland wildlife habitat. The potential is limited for residential use because of the steep slopes and the rock fragments.

Nearly level to strongly sloping, well drained and somewhat excessively drained soils on terraces and alluvial fans

The one map unit in this group occurs mostly around the American Falls Reservoir and on alluvial terraces and fans along the Snake River. Elevations range from about 4,200 to 4,700 feet. The average annual precipitation is about 8 to 11 inches. The average annual soil temperature is about 50 degrees F. The frost-free season is 100 to 140 days.

Nearly all the acreage is used for irrigated crops and pasture. The few small areas that are not irrigated are rangeland and wildlife habitat.

This unit makes up about 3 percent of the survey area.

7. Declo-Feltham-Paniogue

Very deep, nearly level to strongly sloping, well drained and somewhat excessively drained soils that formed in alluvium; on terraces and alluvial fans

This map unit is mainly around the American Falls Reservoir and along the Snake River. It makes up about 3 percent of the survey area. It is about 75 percent Declo soils, 10 percent Feltham soils, 10 percent Paniogue soils, and 5 percent soils of minor extent.

Declo soils are well drained and very deep and have a loam or fine sandy loam surface layer. Feltham soils are somewhat excessively drained and very deep and have a loamy sand surface layer. Paniogue soils are well drained, have a loam or sandy loam surface layer, and have sand or gravel at depths of 20 to 40 inches.

Minor in this unit are the very deep Kecko, Escalante, and Quincy soils; the moderately deep Portino soils; and the shallow stony Trevino soils. The Portino and Trevino soils are along the Bingham County line.

This unit is used mainly for irrigated farming. Nonirrigated areas are rangeland. The potential is somewhat limited for farming because of soil blowing.

Irrigated areas produce good crops of sugar beets, potatoes, small grain, and alfalfa. The potential is moderate to good for residential use in areas where the slope limitations can be overcome. In most places, the limitation can be overcome through proper planning. In irrigated areas, the potential is good for development of openland wildlife habitat.

Nearly level to hilly, well drained and excessively drained soils and Rock outcrop; on basalt plains, alluvial fans, and terraces

The map units in this group are in the west-central part of the survey area. Elevations range from about 4,200 to 4,500 feet. The average annual precipitation is about 8 to 11 inches. The average annual soil temperature is about 49 degrees F. The frost-free season is 100 to 140 days.

Most of the acreage is rangeland and wildlife habitat. Small areas are used for irrigated crops and pasture. There is some potential for more development.

The three units in this group make up about 9 percent of the survey area.

8. Kecko-Escalante-Clems

Very deep, nearly level to hilly, well drained soils that formed in alluvium and windblown material; on basalt plains, alluvial fans, and terraces

This map unit is along and near the Snake River, mainly on the north side. It extends from Massacre Rock State Park to the Blaine and Cassia County lines. It makes up about 2 percent of the survey area. It is about 40 percent Kecko soils, 20 percent Escalante soils, 10 percent Clems soils, and 30 percent soils of minor extent and Rock outcrop.

Kecko soils are very deep fine sandy loams that are calcareous at a depth of 20 to 30 inches. Escalante soils are very deep fine sandy loams that are calcareous throughout. Clems soils are very deep fine sandy loams that are noncalcareous throughout.

Minor in this unit are the somewhat poorly drained Parehat and Schodson soils, the moderately deep Vining soils, the shallow Wapi soils, and Rock outcrop.

This unit is used mainly for irrigated farming and rangeland. In cultivated areas, soil blowing can be a hazard.

Areas where the soils are deep produce good yields of irrigated crops. Where the soils are deep and irrigation water is available, the potential is good for further agricultural development. The small somewhat poorly drained areas may need some artificial drainage to increase their potential for cultivated crops. The potential is good for residential use except in the somewhat poorly drained areas and the areas of shallow soils and Rock outcrop. In irrigated areas, the potential is good for development of openland wildlife habitat. In the somewhat poorly drained areas and along the Snake River, the potential is good for development of wetland wildlife habitat.

9. Quincy-Portneuf

Very deep and deep, nearly level to hilly, excessively drained and well drained soils that formed in sandy

windblown material and in loess; on basalt plains and terraces

This map unit occurs mainly as a band about 2 miles wide in the west-central part of the survey area. It is north of the Union Pacific Railroad track and parallel with the track. It makes up about 2 percent of the survey area. It is about 55 percent Quincy soils, 25 percent Portneuf soils, and 20 percent soils of minor extent.

Quincy soils are very deep and have a loamy fine sand or fine sand texture throughout. They generally occur as dunes or stringers intermingled with Portneuf soils. Portneuf soils are deep. They are fine sandy loam to a depth of about 14 inches and are silt loam below.

Minor in this unit are the very deep Feltham and moderately deep Vining soils and Rock outcrop.

This unit is mainly rangeland and rangeland wildlife habitat. A few small areas are used for irrigated farming.

If water is available, this unit has good potential as irrigated cropland, especially where the silt loam material is within a depth of 2 feet. It may be practical in some places to smooth the area by spreading the sandy material over the silt loam, thus creating potentially good irrigated cropland. The primary limitations in farming are soil blowing and the low available water capacity of the sandy material. In irrigated areas, the potential is good for development of openland wildlife habitat.

10. Quincy-Vining-Rock outcrop

Very deep and moderately deep, nearly level to rolling, excessively drained and well drained soils that formed in windblown material; and Rock outcrop; on basalt plains

This map unit is mainly between the Union Pacific Railroad and the Snake River, in the west-central part of the survey area. It makes up about 4 percent of the survey area. It is about 35 percent Quincy soils, 25 percent Vining soils, 10 percent Rock outcrop, and 30 percent soils of minor extent.

Quincy soils are very deep loamy fine sands and fine sands. Vining soils are fine sandy loams that are moderately deep over basalt. The Rock outcrop is exposed basalt.

Minor in this unit are the very deep Clems, Kecko, and Declo soils and the shallow Wapi soils.

This unit is mainly rangeland and rangeland wildlife habitat. The interspersed Rock outcrop and the shallow soils are the main limitations for farming and most other uses. Soil blowing is common in spring if the soils are disturbed.

This unit has very little potential for farming. Because the areas of deep soils are small and scattered, irrigation is not economically feasible.

Nearly level to very steep, well drained soils and Rock outcrop; on basalt plains

The map units in this group are at the northwestern and western boundaries of the survey area. Elevations range from about 4,200 to 5,500 feet. The average annual precipitation is about 8 to 14 inches. The average annual soil temperature ranges from about 45 to 50 degrees F. The frost-free season is 80 to 140 days.

Part of the acreage is used for irrigated crops and pasture. Small areas are dryfarmed. The rest of the acreage is rangeland, wildlife habitat, and watershed.

The four units in this group make up about 27 percent of the survey area.

11. Portino-Trevino-Portneuf

Shallow to deep, nearly level to hilly, well drained soils that formed in loess; on basalt plains

This map unit is mainly in the basalt plain region in the northwestern part of the survey area. It also occurs as a few scattered areas between the Union Pacific Railroad and the Snake River in the west-central part of the county. It makes up about 13 percent of the survey area. It is about 40 percent Portino soils, 20 percent Trevino soils, 15 percent Portneuf soils, and 25 percent soils of minor extent.

Portino soils are moderately deep and have a silt loam or stony loam surface layer. Trevino soils are shallow and have a stony loam surface layer. Portneuf soils are deep and have a silt loam surface layer.

Minor in this unit are the very deep Neeley soils, the moderately deep Neeley variant, and Rock outcrop.

This unit is used mainly for irrigated farming and rangeland. The main limitations in irrigated farming are the soil depth, the stony surface layer, and the interspersed Rock outcrop. These limitations in addition to the insufficient precipitation severely restrict dryfarming. Only a few small areas are dryfarmed.

The potential is good for irrigated farming in selected areas that are presently dryfarmed. The potential is very limited for further development in most of the area that is not now under cultivation because of the soil depth, the stony surface layer, and the Rock outcrop. In irrigated areas the potential is good for development of openland wildlife habitat.

12. McCarey-Rock outcrop

Moderately deep, nearly level to rolling, well drained soils that formed in loess and in residuum derived from basalt; and Rock outcrop; on basalt plains

This map unit is mainly in the basalt plain region in the northern part of the panhandle of the survey area. The southern and eastern boundaries closely follow the 5,000 foot contour. The unit makes up about 7 percent of the survey area. It is about 50 percent McCarey soils,

25 percent Rock outcrop, and 25 percent soils of minor extent.

McCarey soils are moderately deep. They have a loam surface layer and a clay loam subsoil. The Rock outcrop is mainly bare basalt.

Minor in this unit are soils that are similar to the McCarey soils but are less than 20 inches deep and areas of very deep loams to silty clay loams in playas.

This unit is mainly rangeland. It is severely limited for farming because of the interspersed Rock outcrop and the shallow soils.

The potential is good for development of improved rangeland in selected areas. The potential is also good for development of rangeland wildlife habitat.

13. Rock outcrop-Tenno

Rock outcrop, and shallow, nearly level to very steep, well drained soils that formed in loess and in residuum derived from basalt; on basalt plains

This map unit is mainly in the northern part of the panhandle in the northwestern section of the survey area. A small area occurs near Table Mountain south of the Snake River. Another small area is along the west boundary of Fort Hall Reservation.

This unit makes up about 2 percent of the survey area. It is about 50 percent Rock outcrop, 25 percent Tenno soils, and 25 percent soils of minor extent.

The Rock outcrop is mainly bare basalt. Tenno soils are shallow and have a very stony loam surface layer.

Minor in this unit are the shallow Mike extremely stony silt loams in the Table Mountain area, the very stony loam soil material that is less than 10 inches deep, and McCarey loam.

This unit is mainly rangeland and rangeland wildlife habitat. The predominance of Rock outcrop, the shallow and very shallow soils, and the very stony surface layer are such severe limitations and so difficult to overcome that the potential is poor for any kind of development.

14. Rock outcrop

Nearly level to very steep, exposed lava flows and rock outcrop

This map unit is mainly in the northwestern part of the survey area along the Blaine County line. It makes up about 5 percent of the survey area. It is essentially bare basalt. Cracks, crevices, and pressure ridges are common.

Rock outcrop supports little or no vegetation, and the areas are inaccessible to livestock.

This unit is used as wildlife habitat. It has little or no potential for development of any kind.

Broad land use considerations

Deciding what land should be used for urban development is an important issue in the survey area. Each year some land is developed for urban uses in American Falls, Rockland, and other small areas in the county. At present, urban or built up land is negligible, estimated at less than 1,000 acres. The general soil map can help in planning the general outline of urban areas, but not in selecting sites of specific urban structures. In general, the soils in the survey area that have good potential for cultivated crops also have good potential for urban development. Data about specific soils in this survey can help in planning future land use patterns.

Areas where soils are so unfavorable that urban development is prohibited are moderately extensive in the survey area. Urban development is costly on the mountain soils, the Ridgecrest-Pavohroo-Ricrest map unit, because the soils are steep and have hard bedrock at the surface or a few feet below. The very shallow soils and areas of bare basalt in the Rock outcrop-Tenno and Rock outcrop map units are severely limited for urban development. Large parts of the Ammon-Zunhall map unit are somewhat poorly drained and subject to flooding. Much of the Quincy-Vining-Rock outcrop map unit is shallow sandy soils.

Soils that can be developed for urban uses at lower cost than the soils previously mentioned include the less sloping parts of the Neeley-Wheeler-Pocatello unit, the Newdale-Wheelerville unit, and the Newdale-Rexburg-Lanoak unit. All are excellent farmland. This potential should not be overlooked when broad land uses are considered. The Declo-Feltham-Paniogue, Kecko-Escalante-Clems, and Quincy-Portneuf map units are largely suitable for urban uses. They are also potentially good irrigable soils when irrigation water becomes available. A problem that is common to many of the soils is soil blowing, which is particularly noticeable in spring.

In a few areas the potential is good for farming, but fair or poor for other uses. For example, in the Ammon-Zunhall map unit along the bottom land of Bannock and Rock Creeks, wetness is a limitation to nonfarm use. Adequate drainage and sloping the soil surface can largely overcome this limitation. The better drained soils have good potential for farming, and many farmers have provided sufficient drainage for farm crops. The wetter areas provide good habitat for waterfowl.

The Kecko-Escalante-Clems map unit is north of the Snake River and in the west-central part of the survey area where the growing season is longest. These fine sandy loams are well drained and warm up earlier in spring than the heavier, wetter soils.

Only the Moohoo, Pavohroo, and Ricrest soils in the Ridgecrest-Pavohroo-Ricrest map unit have potential for woodland. Moohoo and Pavohroo soils have fair potential for Douglas-fir, but the acreage is small and is largely

inaccessible. Ricrest soils support aspen groves suitable for firewood.

The mountainous Ridgecrest-Pavohroo-Ricrest map unit has potential for extensive recreation areas. Aspen groves enhance the beauty of these mountains. Hunting, trail hikes, cross-country skiing, and snowmobiling are the major recreational acitivities. American Falls Reservoir and Lake—the largest manmade lake in Idaho—is extensively used for fishing and water sports. Other stretches of the Snake River, including tributary streams, are also used for fishing and recreation. Undrained marshes, although limited in extent, provide habitat for waterfowl. They are in the Ammon-Zunhall map unit and in narrow strips and swales along the Snake River. The Minidoka Migratory Waterfowl Refuge is along the Snake River in the extreme western part of the survey area.

Interesting lava formations and craters make the northwestern panhandle area unique. The Great Rift extends from the Ice Caves in Power County northwesterly toward the Craters of the Moon National Monument.

Soil maps for detailed planning

The map units shown on the detailed soil maps at the back of this publication represent the kinds of soil in the survey area. They are described in this section. The descriptions together with the soil maps can be useful in determining the potential of a soil and in managing it for food and fiber production; in planning land use and developing soil resources; and in enhancing, protecting, and preserving the environment. More information for each map unit, or soil, is given in the section "Use and management of the soils."

Preceding the name of each map unit is the symbol that identifies the soil on the detailed soil maps. Each soil description includes general facts about the soil and a brief description of the soil profile. In each description, the principal hazards and limitations are indicated, and the management concerns and practices needed are discussed.

The map units on the detailed soil maps represent an area on the landscape made up mostly of the soil or soils for which the unit is named. Most of the delineations shown on the detailed soil map are phases of soil series.

Soils that have a profile that is almost alike make up a *soil series*. Except for allowable differences in texture of the surface layer or of the underlying substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement in the profile. A soil series commonly is named for a town or geographic feature near the place where a soil of that series was first observed and mapped.

Soils of one series can differ in texture of the surface layer or in the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristics that affect their use. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Arbone loam, 0 to 4 percent slopes, is one of several phases within the Arbone series.

Some map units are made up of two or more dominant kinds of soil. Such map units are called soil complexes and soil associations.

A *soil complex* consists of areas of two or more soils that are so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area includes some of each of the two or more dominant soils, and the pattern and proportion are somewhat similar in all areas. Hondoho-Arbone complex, steep, is an example.

A *soil association* is made up of soils that are geographically associated and are shown as one unit on the map because it is not practical to separate them. A soil association has considerable regularity in geographic pattern and in the kinds of soil that are a part of it. The extent of the soils can differ appreciably from one delineation to another; nevertheless, interpretations can be made for use and management of the soils. Arbone-Hondoho association, rolling, is an example.

Most map units include small, scattered areas of soils other than those that appear in the name of the map unit. Some of these soils have properties that differ substantially from those of the dominant soil or soils and thus could significantly affect use and management of the map unit. These soils are described in the description of each map unit.

Most mapped areas include places that have little or no soil material and support little or no vegetation. Such places are called *miscellaneous areas*; they are delineated on the soil map and given descriptive names. Rock outcrop is an example. Some of these areas are too small to be delineated and are identified by a special symbol on the soil map.

This survey has both narrowly defined and broadly defined map units. The composition of broadly defined units generally is more variable. The soils were examined at wider intervals than those for narrowly defined units. Composition has been controlled well enough, however, for the anticipated use of the soils. Broadly defined units are indicated in the Soil Legend by an asterisk.

The acreage and proportionate extent of each map unit are given in table 4, and additional information on properties, limitations, capabilities, and potentials for many soil uses is given for each kind of soil in other tables in this survey. (See "Summary of tables.") Many of the terms used in describing soils are defined in the Glossary.

Soil descriptions

1—Ammon silt loam, 0 to 3 percent slopes. This very deep, well drained soil is on alluvial fans and foot slopes at elevations of 4,200 to 5,800 feet. It formed in alluvium derived from loess. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 44 degrees F. The average frost-free season is between 94 and 126 days.

Up to 10 percent of this map unit is included small areas of Zunhall silt loam, Rexburg silt loam, and Newdale silt loam, all with slopes of 0 to 3 percent.

Typically, the surface layer of this Ammon soil is grayish brown silt loam about 13 inches thick. The underlying material is grayish brown silt loam to more than 60 inches. The soil is moderately calcareous except for the upper 7 inches of the surface layer, which is only slightly calcareous.

Permeability is moderate. The effective rooting depth is 60 inches or more. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is medium or slow from bare soil. The hazard of erosion is moderate in irrigated areas and slight in dryfarmed areas.

This unit is used for irrigated hay (fig. 2), pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for small grain or range.

An example of a suitable crop rotation in irrigated areas is 3 years of alfalfa for hay or grass and legumes for pasture, 1 year of barley or wheat for grain, 1 year of sugar beets or potatoes, 1 year of barley or wheat for grain, and then for hay pasture seeded with the grain or in the grain stubble. A small grain-fallow rotation system is best suited in the nonirrigated areas. Crop residue management and minimum tillage help to control erosion. Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Sprinkler irrigation is well suited to most crops. The corrugation method is suited to row crops, small grain, and alfalfa. The border method is suited to alfalfa.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge.

The native vegetation is mainly bluebunch wheatgrass, big sagebrush, and antelope bitterbrush.

Management of the native vegetation should be designed to maintain or increase the production of desirable forage plants, such as bluebunch wheatgrass, western wheatgrass, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is badly deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

Capability subclass IIe irrigated, IIIc nonirrigated.

2—Arbone loam, 0 to 4 percent slopes. This very deep, well drained soil formed in loess and mixed alluvium on alluvial fans and terraces at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Newdale silt loam, Arbone variant silt loam, and Hondoho gravelly loam.

Typically, the surface layer of this Arbone soil is grayish brown loam about 10 inches thick. The subsoil is brown and light brownish gray loam about 9 inches thick. It is strongly calcareous in the lower part. The substratum is strongly calcareous white loam to a depth of 38 inches and moderately calcareous light brown loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is slow. The erosion hazard is slight.

Nearly all of this unit is dryfarmed. It is used mainly for small grain. A suitable crop rotation is 1 year of winter wheat, 1 year of spring small grain, and 1 year of fallow. Some farmers are successfully using an annual small grain cropping system in which winter wheat and spring barley are planted in alternate years.

Crop residue management and minimum tillage help to control erosion. Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

This unit is well suited to cottontail, songbirds, and such upland game birds as mourning dove and Hungarian partridge.

Capability subclass IIIc nonirrigated.

3—Arbone loam, 4 to 12 percent slopes. This very deep, well drained soil formed in loess and mixed alluvium on alluvial fans and terraces at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Newdale silt loam, Hondoho gravelly loam, Lanoak silt loam, and Wheelerville silt loam.

Typically, the surface layer of this Arbone soil is grayish brown loam about 10 inches thick. The subsoil is brown and light brownish gray loam about 9 inches thick. It is strongly calcareous in the lower part. The substratum is strongly calcareous white loam to a depth of 38

inches and moderately calcareous light brown loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is 60 inches or more. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is medium. The erosion hazard is moderate.

Nearly all of this unit is dryfarmed. It is used mainly for small grain. A suitable crop rotation is 1 year of winter wheat, 1 year of spring small grain, and 1 year of fallow. Some farmers are successfully using an annual cropping system in which winter wheat and spring barley are planted in alternate years.

Crop residue management, minimum tillage, and contour or cross-slope farming can help to control erosion. Terraces and diversion systems are practical where needed to control erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

This unit is well suited to cottontail, songbirds, and such upland game birds as mourning dove and Hungarian partridge.

Capability subclass IIIe nonirrigated.

4—Arbone loam, 12 to 20 percent slopes. This very deep, well drained soil formed in loess and mixed alluvium on alluvial fans and terraces at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees. The average frost-free season is between 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Newdale silt loam, Hondoho gravelly loam, Lanoak silt loam, and Wheelerville silt loam.

Typically, the surface layer of this Arbone soil is grayish brown loam about 10 inches thick. The subsoil is brown and light brownish gray loam about 9 inches thick. It is strongly calcareous in the lower part. The substratum is strongly calcareous white loam to a depth of 38 inches and moderately calcareous light brown loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is 60 inches or more. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid. The erosion hazard is high.

Nearly all of this unit is dryfarmed. It is used mainly for small grain. A crop rotation that is being used successfully is an annual cropping system in which winter wheat and spring barley are planted in alternate years.

Crop residue management, minimum tillage, and contour or cross-slope farming help to control erosion. Fall chiseling across the slope can help to catch and reduce winter moisture runoff.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

This unit is well suited to cottontail, songbirds, and such upland game birds as mourning dove and Hungarian partridge.

Capability subclass IIIe nonirrigated.

5—Arbone-Hondoho association, rolling. These soils are on hills, alluvial fans, and terraces at elevations of about 5,000 to 6,500 feet. The slopes are 4 to 12 percent and about 50 to 300 feet long.

This association is about 70 percent Arbone soil, 20 percent Hondoho soil, and 10 percent small areas of Newdale silt loam, Rexburg silt loam, Wahtigup gravelly loam, and a moderately deep stony loam that is underlain by volcanic ash or tuff.

The Arbone soil is very deep and well drained. It formed in loess and mixed alluvium. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 75 and 100 days.

Typically, the surface layer of this Arbone soil is grayish brown loam about 10 inches thick. The subsoil is brown and light brownish gray loam about 9 inches thick. It is strongly calcareous in the lower part. The substratum is light brown and white loam to a depth of more than 60 inches. It is strongly calcareous in the upper part and moderately calcareous in the lower part.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

The Hondoho soil is very deep and well drained. It formed in a mixture of loess and material weathered from quartzite or sandstone rocks. The upper part of the profile is influenced by colluvium in some areas. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 75 and 100 days.

Typically, the surface layer of this Hondoho soil is brown gravelly loam about 8 inches thick. The subsoil is grayish brown gravelly loam about 4 inches thick. The substratum is very pale brown gravelly loam and very gravelly loam to a depth of 41 inches and very pale brown very cobbly loam to 65 inches. It is strongly calcareous or very strongly calcareous.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is medium. Surface runoff is rapid from bare soil. The erosion hazard is high.

This association is used for dryfarming and range. The dryfarmed areas are used chiefly for small grain. A suitable rotation is 1 year of winter wheat, 1 year of spring

small grain, and 1 year of fallow. Some farmers are successfully using an annual small grain cropping system in which winter wheat and spring barley are planted in alternate years.

Crop residue management, minimum tillage, and cross-slope farming can help to control erosion. Chiseling across the slope helps to catch and reduce winter moisture runoff. Terraces and diversion systems can help to control erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, slender wheatgrass, antelope bitterbrush, needlegrass, and big sagebrush.

Management of the range areas should be designed to increase the production of more desirable forage plants, such as bluebunch wheatgrass, slender wheatgrass, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is badly deteriorated. Whitmar bluebunch wheatgrass, Topar pubescent wheatgrass, and Sherman big bluegrass are suitable for seeding.

The Arbone and Hondoho soils that are dryfarmed provide food and cover for cottontail and such upland game birds as mourning dove and Hungarian partridge. Native plants on the range areas provide food and cover for jackrabbit, sage grouse, and mountain quail.

Capability subclass IIIe nonirrigated.

6—Arbone-Hondoho association, hilly. These soils are on hills, alluvial fans, and terraces at elevations of about 5,000 to 6,500 feet. The slopes are 12 to 20 percent and about 50 to 300 feet long.

This association is about 50 percent Arbone soil, 35 percent Hondoho soil, and 15 percent small areas of Newdale silt loam, Rexburg silt loam, Wahtigup gravelly loam, and a moderately deep stony loam that is underlain by volcanic ash or tuff.

The Arbone soil is very deep and well drained. It formed in loess and mixed alluvium. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 75 and 100 days.

Typically, the surface layer of this Arbone soil is grayish brown loam about 10 inches thick. The subsoil is brown and light brownish gray loam about 9 inches thick. It is strongly calcareous in the lower part. The substratum is white and light brown loam to a depth of more than 60 inches. It is strongly calcareous in the upper part and moderately calcareous in the lower part.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

The Hondoho soil is very deep and well drained. It formed in a mixture of loess and material weathered from quartzite or sandstone rocks that has had additions of colluvium in the upper part in some areas. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 75 and 100 days.

Typically, the surface layer of this Hondoho soil is brown gravelly loam about 8 inches thick. The subsoil is grayish brown gravelly loam about 4 inches thick. The substratum is very pale brown gravelly loam and very gravelly loam to a depth of 41 inches and very pale brown very cobbly loam to 60 inches or more. It is strongly calcareous or very strongly calcareous.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is moderate. Surface runoff is rapid from bare soil. The erosion hazard is high.

This association is used for dryfarming and range. The dryfarmed areas are used chiefly for small grain. A suitable crop rotation is 1 year of winter wheat, 1 year of spring small grain, and 1 year of fallow. Some farmers are successfully using an annual small grain cropping system in which winter wheat and spring barley are planted in alternate years.

Crop residue management, minimum tillage, and cross-slope farming can help to control erosion. Chiseling across the slope helps to catch and reduce winter moisture runoff, which reduces the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, slender wheatgrass, needlegrass, antelope bitterbrush, and big sagebrush.

Management of the native vegetation should be designed to increase the production of desirable forage plants, such as bluebunch wheatgrass, slender wheatgrass, and needlegrass. Brush management by proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is badly deteriorated. Whitmar bluebunch wheatgrass, Topar pubescent wheatgrass, and Sherman big bluegrass are suitable for seeding.

The Arbone and Hondoho soils that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as mourning dove and Hungarian partridge. Native plants on the range areas provide food and cover for jackrabbit, sage grouse, and mountain quail.

Capability subclass IIIe nonirrigated.

7—Arbone Variant silt loam, 0 to 4 percent slopes. This very deep, well drained soil formed in alluvium from loess and weathered sedimentary rocks on low terraces and the lower part of alluvial fans. Elevation is about 5,000 to 6,500 feet. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Arbone loam, Newdale silt loam, and Zunhall silt loams.

Typically, the surface layer of this Arbone variant soil is grayish brown silt loam about 5 inches thick. The subsoil, about 14 inches thick, is grayish brown silt loam in the upper 6 inches and strongly calcareous very pale brown silty clay loam in the lower 8 inches. The substratum is very strongly calcareous white silty clay loam and light gray silt loam to a depth of 45 inches and strongly calcareous light gray loam to 65 inches.

Permeability is moderate in the surface layer, the upper part of the subsoil, and the lower substratum. It is moderately slow in the lower part of the subsoil and the upper substratum. This soil may be wet for short periods in spring. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight.

Nearly all of this unit is dryfarmed. It is used mainly for small grain. A suitable crop rotation is 1 year of winter wheat, 1 year of spring small grain, and 1 year of fallow. Some farmers are successfully using an annual small grain cropping system in which winter wheat and spring barley are planted in alternate years.

Stubble mulch tillage and minimum tillage help to control erosion and to maintain or improve the soil structure. Returning plant residue helps to maintain organic matter content. A practice that may help to improve water intake on this soil is seeding plants that have a fibrous rooting system, which penetrates the moderately slowly permeable part of the profile.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge.

Capability subclass IIIc nonirrigated.

8—Declo fine sandy loam, 0 to 2 percent slopes. This very deep, well drained soil is on terraces at elevations of 4,200 to 4,600 feet. It formed in medium textured alluvium or lacustrine sediments that have been somewhat reworked by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo loam, Kecko fine sandy loam, Escalante fine sandy loam, Paniogue sandy loam, Paniogue loam, and some very small areas of Portino stony loam and Trevino stony loam along the Bingham County line.

Typically, the surface layer of this Declo soil is moderately calcareous grayish brown fine sandy loam about 11 inches thick. The underlying material is strongly calcareous white loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few small nonirrigated areas are range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, big sagebrush, and rabbitbrush. Proper grazing management is essential in maintaining or improving the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIc irrigated, VIc nonirrigated.

9—Declo fine sandy loam, 2 to 4 percent slopes. This very deep, well drained soil is on terraces at elevations of 4,200 to 4,600 feet. It formed in medium textured alluvium or lacustrine sediments that have been somewhat reworked by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo loam, Kecko fine sandy loam, Escalante fine sandy loam, Paniogue sandy loam, Paniogue loam, and some very small areas of Portino stony loam and Trevino stony loam along the Bingham County line.

Typically, the surface layer of this Declo soil is moderately calcareous grayish brown fine sandy loam about 11 inches thick. The underlying material is strongly calcareous white loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is slow or medium from bare soil. The erosion hazard is moderate in irrigated areas and slight in nonirrigated areas. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few small nonirrgated areas are range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, big sagebrush, and rabbitbrush. Proper grazing management is needed to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically, mechanically, or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIe irrigated, VIc nonirrigated.

10—Declo fine sandy loam, 4 to 8 percent slopes. This very deep, well drained soil is on terraces at elevations of 4,200 to 4,600 feet. It formed in medium textured alluvium or lacustrine sediments that have been somewhat reworked by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo loam, Kecko fine sandy loam, Escalante fine sandy loam, Paniogue sandy loam, Paniogue loam, and some very small areas of Portino stony loam and Trevino stony loam along the Bingham County line.

Typically, the surface layer of this Declo soil is moderately calcareous grayish brown fine sandy loam about 11 inches thick. The underlying material is strongly calcareous white loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing is a slight hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few small nonirrigated areas are range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, big sagebrush, and rabbitbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically, mechanically, or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, VIe nonirrigated.

11—Declo loam, 0 to 2 percent slopes. This very deep, well drained soil is on terraces at elevations of 4,200 to 4,600 feet. It formed in medium textured alluvium or lacustrine sediments that have been somewhat reworked by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo fine sandy loam, Paniogue loam, Kecko fine sandy loam, Escalante fine sandy loam, and some very small areas of Portino stony loam and Trevino stony loam along the Bingham County line.

Typically, the surface layer of this Declo soil is moderately calcareous grayish brown loam about 11 inches thick. The underlying material is strongly calcareous white loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few small nonirrigated areas are range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, big sagebrush, and rabbitbrush. Proper grazing management is needed to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIc irrigated, VIc nonirrigated.

12—Declo loam, 2 to 4 percent slopes. This very deep, well drained soil is on terraces at elevations of 4,200 to 4,600 feet. It formed in medium textured alluvium or lacustrine sediments that have been somewhat reworked by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo fine sandy loam, Paniogue loam, Kecko fine sandy loam, and Escalante fine sandy loam and some very small areas of Portino stony loam and Trevino stony loam along the Bingham County line.

Typically, the surface layer of this Declo soil is moderately calcareous grayish brown loam about 11 inches thick. The underlying material is strongly calcareous white loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is medium or slow from bare soil. The erosion hazard is moderate in irrigated areas and slight in nonirrigated areas. If the soil surface is bare, soil blowing is a slight hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few small nonirrigated areas are range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, big sagebrush, and rabbitbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically, mechanically, or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIe irrigated, VIc nonirrigated.

13—Declo loam, 4 to 8 percent slopes. This very deep, well drained soil is on terraces at elevations of 4,200 to 4,600 feet. It formed in medium textured alluvium or lacustrine sediments that have been somewhat reworked by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo fine sandy loam, Paniogue loam, Kecko fine sandy loam, Escalante fine sandy loam, and some very small areas of Portino stony loam and Trevino stony loam along the Bingham County line.

Typically, the surface layer of this Declo soil is moderately calcareous grayish brown loam about 11 inches thick. The underlying material is strongly calcareous white loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing is a slight hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few small nonirrigated areas are range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, big sagebrush, and rabbitbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically, mechanically, or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, VIe nonirrigated.

14—Declo loam, 8 to 12 percent slopes. This very deep, well drained soil is on terraces at elevations of 4,200 to 4,600 feet. It formed in medium textured alluvium or lacustrine sediments that have been somewhat reworked by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 5 percent of this map unit is included small areas of Declo fine sandy loam, Kecko fine sandy loam, and Escalante fine sandy loam.

Typically, the surface layer of this Declo soil is moderately calcareous grayish brown loam about 11 inches thick. The underlying material is strongly calcareous white loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing is a slight hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. Slopes are generally only about 50 feet long, and areas of more gentle slopes are above and below. Because the slopes are short, managing this soil differently from the soils above and below is generally impractical. The few nonirrigated areas are range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IVe irrigated, VIe nonirrigated.

15—Declo loam, 12 to 20 percent slopes. This very deep, well drained soil is on terraces at elevations of 4,200 to 4,600 feet. It formed in medium textured alluvium or lacustrine sediments that have been somewhat reworked by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 5 percent of this map unit is included small areas of Declo fine sandy loam and Kecko fine sandy loam.

Typically, the surface layer of this Declo soil is moderately calcareous grayish brown loam about 11 inches thick. The underlying material is strongly calcareous white loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing is a slight hazard in spring.

Slopes on this soil are generally only about 50 feet long, and areas of more gentle slopes are above and below. Because the slopes are short, managing this soil differently from the soils above and below is generally impractical. Most areas are managed with the surrounding soils. In areas large enough to manage separately, irrigated hay or pasture is the best use. Sprinkler irrigation is suited to these areas.

A few small areas are range. The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, big sagebrush, and rabbitbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable

forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass VIe irrigated, VIe nonirrigated.

16—Declo Variant bouldery loam, 2 to 4 percent slopes. This very deep, well drained soil formed in mixed alluvium and colluvium on low terraces adjacent to the Snake River. Elevation is about 4,200 to 4,400 feet. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Up to about 10 percent of this map unit is included small areas of Declo loam, Declo fine sandy loam, Escalante fine sandy loam, and Kecko fine sandy loam.

Typically, the surface layer of this Declo variant soil is brown bouldery loam about 5 inches thick. The subsoil is pale brown loam about 8 inches thick. The substratum is strongly calcareous light gray very bouldery loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is low. The organic matter content is low in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate. Soil blowing may be a hazard if the soil surface is bare. Boulders that are 2 feet to more than 4 feet in diameter cover about 1 percent of the surface.

Almost all of this unit is range and wildlife habitat. The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Chemical brush control may be beneficial. Mechanical brush control and seeding are not practical because of the bouldery surface layer.

The native plants on this soil provide food and cover for mule deer, jackrabbit, and sage grouse.

Capability subclass VIIs nonirrigated.

17—Dranyon-Ricrest association, steep. These gently sloping to steep soils are on mountain slopes and ridges at elevations ranging from about 5,500 to 7,000 feet. The slopes are dominantly 4 to 30 percent, irregular, concave to convex, and 50 to 300 feet long.

This association is about 40 percent Dranyon soil and 30 percent Ricrest soil. The Dranyon soil is associated with fine-grained sandstone and quartzite. The Ricrest soil is associated with limestone.

About 15 percent of this association is Moohoo and Pavohroo soils, which are generally in areas of snow accumulation, such as draws and depressions, where Douglas-fir grows. About 10 percent is Hymas, Wahtigup, and Ridgecrest soils, which generally occupy the warmer drier areas, such as south aspects, ridgetops, and small rises. The remaining 5 percent is Rock outcrop and a shallow soil that is less than 20 inches deep over quartzite.

The Dranyon soil is very deep and well drained. It formed mainly in material weathered from fine-grained sandstone that has had an addition of colluvium in some places and loess in other places or additions of both colluvium and loess. This soil is generally on the north and east aspects at the lower elevations and on any aspect at the higher elevations. The average annual precipitation is about 20 inches, including about 6 feet of snowfall. The average annual soil temperature is about 40 degrees F.

Typically, the surface layer is dark grayish brown loam about 9 inches thick. The subsoil extends to a depth of 63 inches. It is grayish brown gravelly silt loam and brown gravelly silty clay loam to a depth of 39 inches. Below this is pale brown clay loam.

Permeability is moderate in the surface layer and moderately slow in the subsoil. The effective rooting depth is 60 inches or more. The available water capacity is high. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The Ricrest soil also is very deep and well drained. It formed in colluvium and material weathered from limestone that has had additions of loess. It is generally on ridges and foot slopes. It can be on any aspect at lower elevations. At upper elevations it is on the south and west aspects and on ridgetops. The average annual precipitation is about 18 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer is very dark grayish brown loam about 10 inches thick. The subsoil is dark gray clay loam about 14 inches thick. The substratum is light brownish gray and light gray gravelly loam to a depth of 62 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The native vegetation on the Dranyon soil is mainly aspen, bluebunch wheatgrass, Idaho fescue, serviceberry, and antelope bitterbrush. The native vegetation on

the Ricrest soil is mainly big sagebrush, bluebunch wheatgrass, and Idaho fescue.

This association is used mainly for livestock grazing, wildlife habitat, and watershed. Some of the aspen is used as firewood. Proper grazing management is needed to maintain or improve the plant cover.

Management of the vegetation should be designed to increase the production of bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. Brush management by proper grazing practices or with chemicals may be needed in reestablishing forage production to its potential. Mechanical brush management followed by proper grazing practices or seeding is practical on slopes up to 20 percent. Greenar intermediate wheatgrass, Luna pubescent wheatgrass, and Manchar smooth brome are suitable for seeding.

The native plants on the Dranyon and Ricrest soils provide food and cover for mule deer, elk, mountain quail, ruffed grouse, and Franklin's grouse.

Capability subclass VIe nonirrigated.

18—Feltham loamy sand, 0 to 2 percent slopes. This very deep, somewhat excessively drained soil is on terraces and alluvial fans at elevations of about 4,200 to 4,500 feet. It formed in alluvium that has been reworked in the upper part by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 125 and 140 days.

Up to about 10 percent of this map unit is included small areas of Quincy loamy fine sand, Quincy fine sand, Declo fine sandy loam, Kecko fine sandy loam, and Escalante fine sandy loam.

Typically, the surface layer of this Feltham soil is grayish brown loamy sand about 6 inches thick. The underlying material is light brownish gray and brown loamy sand to a depth of 35 inches, pale brown fine sandy loam to 45 inches, and light gray loam to more than 60 inches.

Permeability is rapid in the sandy upper part and moderately rapid in the loamy lower part. The effective rooting depth is more than 60 inches. The available water capacity is low in the sandy upper part and moderate in the loamy lower part. The organic matter content is low in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. The soil blowing hazard is high if the surface is bare (fig. 3).

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few small nonirrigated areas are range and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing. A cover crop planted in fall may also help to reduce soil blowing.

The native vegetation is mainly needleandthread, Indian ricegrass, yellow wildrye, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as needleandthread, Indian ricegrass, and bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants in the range areas provide food and cover for mule deer, jackrabbit, and sage grouse.

Capability subclass IIIe irrigated, VIIe nonirrigated.

19—Feltham loamy sand, 2 to 4 percent slopes. This very deep, somewhat excessively drained soil is on terraces and alluvial fans at elevations of about 4,200 to 4,500 feet. It formed in alluvium that has been reworked in the upper part by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 125 and 140 days.

Up to about 10 percent of this map unit is included small areas of Quincy loamy fine sand, Quincy fine sand, Declo fine sandy loam, Kecko fine sandy loam, and Escalante fine sandy loam.

Typically, the surface layer of this Feltham soil is grayish brown loamy sand about 6 inches thick. The underlying material is light brownish gray and brown loamy sand to a depth of 35 inches, pale brown fine sandy loam to 45 inches, and light gray silt loam to more than 60 inches.

Permeability is rapid in the sandy upper part and moderately rapid in the loamy lower part. The effective rooting depth is more than 60 inches. The available water capacity is low in the upper part and moderate in the lower part. The organic matter content is low in the surface layer. Surface runoff is slow from bare soil. The

erosion hazard is slight. The hazard of soil blowing is high if the soil surface is bare.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few small nonirrigated areas are range and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing. A cover crop planted in fall may also help to reduce soil blowing. Careful application of irrigation water helps to prevent water erosion.

The native vegetation is mainly needleandthread, Indian ricegrass, yellow wildrye, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as needleandthread and Indian ricegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, jackrabbit, and sage grouse.

Capability subclass IIIe irrigated, VIIe nonirrigated.

20—Feltham loamy sand, 4 to 8 percent slopes. This very deep, somewhat excessively drained soil is on terraces and alluvial fans at elevations of about 4,200 to 4,500 feet. It formed in alluvium that has been reworked in the upper part by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 125 and 140 days.

Up to about 10 percent of this map unit is included small areas of Quincy loamy fine sand, Quincy fine sand, Declo fine sandy loam, Kecko fine sandy loam, and Escalante fine sandy loam.

Typically, the surface layer of this Feltham soil is grayish brown loamy sand about 6 inches thick. The underlying material is light brownish gray and brown loamy sand to a depth of 35 inches, pale brown fine sandy loam to 45 inches, and light gray silt loam to more than 60 inches.

Permeability is rapid in the sandy upper part and moderately rapid in the loamy lower part. The effective rooting depth is more than 60 inches. The available water capacity is low in the upper part and moderate in the lower part. The organic matter content is low in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is high. The soil blowing hazard is very high if the soil surface is bare.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few small nonirrigated areas are range and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable practices that can help to control erosion. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing. A cover crop planted in fall may also help to reduce soil blowing. Careful application of irrigation water, preferably by sprinklers, helps to prevent water erosion.

The native vegetation is mainly needleandthread, Indian ricegrass, yellow wildrye, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as needleandthread and Indian ricegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, jackrabbit, and sage grouse.

Capability subclass IVe irrigated, VIIe nonirrigated.

21—Feltham loamy sand, 8 to 12 percent slopes. This very deep, somewhat excessively drained soil is on terraces and alluvial fans at elevations of about 4,200 to 4,500 feet. It formed in alluvium that has been reworked in the upper part by wind. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 125 and 140 days.

Up to about 10 percent of this map unit is included small areas of Quincy loamy fine sand, Quincy fine sand, Declo fine sandy loam, Kecko fine sandy loam, and Escalante fine sandy loam.

Typically, the surface layer of this Feltham soil is grayish brown loamy sand about 6 inches thick. The underlying material is light brownish gray and brown loamy sand to a depth of 35 inches, pale brown fine sandy loam to 45 inches, and light gray silt loam to more than 60 inches.

Permeability is rapid in the sandy upper part and moderately rapid in the loamy lower part. The effective rooting depth is more than 60 inches. The available water capacity is low in the upper part and moderate in the lower part. The organic matter content is low in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is very high. The soil blowing hazard is high if the soil surface is bare.

This unit is used mainly for irrigated hay, pasture, and small grain. The few nonirrigated areas are range and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 3 years of alfalfa for hay or grasses and legumes for pasture, 1 year of winter wheat, 1 year of spring grain, and then 1 year of spring grain with hay or pasture seeded with the grain or in the grain stubble.

Sprinkler irrigation, which is the best irrigation method for this soil, is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable practices that can help to control erosion. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing. A cover crop planted in fall may also help to reduce soil blowing.

The native vegetation is mainly needleandthread, Indian ricegrass, yellow wildrye, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as needleandthread, Indian ricegrass, and bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, jackrabbit, and sage grouse.

Capability subclass IVe irrigated, VIIe nonirrigated.

22—Hondoho-Arbone complex, steep. These soils are on hills and alluvial fans and terraces at elevations of about 5,000 to 6,500 feet. The slopes are 20 to 30 percent and about 50 to 300 feet long.

This map unit is about 60 percent Hondoho soil, 25 percent Arbone soil, and 15 percent included small areas of Lanoak silt loam, Rexburg silt loam, Wahtigup gravelly loam, Ricrest loam, Ridgecrest stony loam, and a moderately deep stony loamy soil over volcanic ash or tuff.

The Hondoho soil is very deep and well drained. It formed in a mixture of loess and material weathered from quartzite or sandstone that in some areas has had additions of colluvium in the upper part. The average annual precipitation is about 14 inches. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer is brown gravelly loam about 8 inches thick. The subsoil is grayish brown gravelly loam about 4 inches thick. The substratum is very pale brown gravelly loam and very gravelly loam to a depth of 41 inches and very pale brown very cobbly loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is moderate. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The Arbone soil is very deep and well drained. It formed in loess and mixed alluvium. The average annual precipitation is about 14 inches. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer is grayish brown loam about 10 inches thick. The subsoil is brown and light brownish gray loam, about 9 inches thick, that is strongly calcareous in the lower part. The substratum is strongly calcareous white loam to 38 inches and moderately calcareous light brown loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The native vegetation on the Hondoho and Arbone soils is mainly bluebunch wheatgrass, slender wheatgrass, needlegrass, and big sagebrush.

This unit is used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is needed to maintain or improve the plant cover.

Management of the native vegetation should be designed to increase the production of bluebunch wheatgrass, slender wheatgrass, and needlegrass. Brush management by proper grazing practices may be needed in reestablishing forage production to its potential. Brush can also be controlled chemically or by burning. Mechanical brush management or seeding are not generally practical because of the steep slopes.

These Hondoho and Arbone soils produce native plants that provide food and cover for jackrabbit, sage grouse, and mountain quail.

Capability subclass IVe nonirrigated.

23—Hymas-Wahtigup-Ridgecrest complex, very steep. These very steep soils are on mountain ridges and foot slopes at elevations of about 5,000 to 6,800 feet. The slopes are dominantly 30 to 60 percent and 30 to 600 feet long.

This map unit is about 25 percent Hymas soil, 25 percent Wahtigup soil, 20 percent Ridgecrest soil, and 30 percent included small areas of Ricrest loam, Pavohroo stony loam, Sheege extremely stony loam, a moderately deep soil over quartzite or sandstone, a shallow soil less than 20 inches deep over quartzite or sandstone, and Rock outcrop.

The Hymas soil is shallow and well drained. It formed in material weathered from limestone that has had additions of loess and colluvium in the upper part. The average annual precipitation is about 15 inches, including about 4 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Hymas soil is grayish brown extremely stony loam about 7 inches thick. The underlying material is light brownish gray very gravelly loam to limestone bedrock at about 18 inches. The soil is strongly calcareous throughout.

The Hymas soil has moderate permeability. The effective rooting depth is 10 to 20 inches. The available water capacity is very low. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The Wahtigup soil is very deep and well drained. It formed in colluvium and local alluvium from limestone that has had additions of loess. The average annual precipitation is about 15 inches, including about 4 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Wahtigup soil is moderately calcareous grayish brown gravelly loam about 12 inches thick. The underlying material is strongly calcareous light brownish gray gravelly loam to a depth of 24 inches and light gray stony loam to more than 60 inches.

The Wahtigup soil has moderate permeability. The effective rooting depth is more than 60 inches. The available water capacity is moderate. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The Ridgecrest soil is moderately deep and well drained. It formed principally in material weathered from limestone with some additions of loess and colluvium in the upper part. The average annual precipitation is about 15 inches, including about 4 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Ridgecrest soil is brown stony loam about 9 inches thick. The underlying material is strongly calcareous brown extremely stony loam to limestone bedrock at about 29 inches.

The Ridgecrest soil has moderate permeability. The effective rooting depth is 20 to 40 inches. The available water capacity is low. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

Native vegetation on the Hymas soil is mainly bluebunch wheatgrass, prairie junegrass, antelope bitterbrush, and low sagebrush. On the Wahtigup and Ridgecrest soils it is mainly bluebunch wheatgrass and bluegrass.

This unit is used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is essential to maintain or improve the plant cover.

Management of vegetation should be designed to increase the production of bluebunch wheatgrass and antelope bitterbrush and to control erosion as much as possible. Brush should not be managed chemically or by burning because of the erosion hazard that may be created when the brush is killed. Mechanical brush management and seeding are not practical because of the gravelly, stony, and very stony surface layer of the soils; the steepness of the slopes; and the erosion hazard.

The native plants on this unit provide food and cover for mule deer, sage grouse, California quail, and mountain quail.

Capability subclass VIIe nonirrigated.

24—Kecko-Clems-Vining association, undulating. These gently sloping to moderately steep soils are on basalt plains and terraces (fig. 4) at elevations of about 4,200 to 4,400 feet. The slopes range from 0 to 20 percent but dominantly are less than 8 percent. The steeper slopes occur as narrow stringers along old drainageways.

This association is about 45 percent Kecko soil, 25 percent Clems soil, and 15 percent Vining soil.

The remaining 15 percent of this association is small areas of Quincy loamy fine sand, Portino silt loam, Trevino stony loam, Wapi loamy fine sand, and Rock outcrop.

The Kecko soil is very deep and well drained. It formed in windblown material of mixed origin on basalt plains. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F.

Typically, the surface layer of this Kecko soil is light brownish gray fine sandy loam about 9 inches thick. The subsoil is pale brown fine sandy loam and loam about 20 inches thick. The substratum is stratified white fine sandy loam, very pale brown loamy fine sand, and light gray fine sand to a depth of 65 inches or more.

Permeability is moderately rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The hazard of water erosion is slight. The hazard of soil blowing is high on bare soil.

The Clems soil is very deep and well drained. It formed in windblown material of mixed origin. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F.

Typically, the surface layer of this Clems soil is brown fine sandy loam about 7 inches thick. The subsoil is brown fine sandy loam about 16 inches thick. The substratum is yellowish brown fine sandy loam to a depth of 70 inches or more.

Permeability is moderately rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The hazard of water erosion is slight. The hazard of soil blowing is high on bare soil.

The Vining soil is moderately deep and well drained. It formed in windblown material of mixed origin on basalt plains. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F.

Typically, the surface layer of this Vining soil is brown fine sandy loam about 5 inches thick. The subsoil is brown fine sandy loam about 8 inches thick. The substratum is light brownish gray fine sandy loam to basalt bedrock at 25 inches.

Permeability is moderately rapid. The effective rooting depth is 20 to 40 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The hazard of water erosion is slight. The hazard of soil blowing is high on bare soil.

The native vegetation on the Kecko and Clems soils is mainly big sagebrush and bluebunch wheatgrass. On the Vining soil it is mainly Indian ricegrass, big sagebrush, bluebunch wheatgrass, and Thurber needlegrass.

This association is used mainly for livestock grazing and wildlife habitat. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation on the Kecko soil should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass. In addition to proper grazing management, controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

Management of the vegetation on the Clems soil should be designed to maintain or increase the production of desirable forage plants, such as bluebunch wheatgrass and needleandthread. In addition to proper grazing management, controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

Management of the vegetation on the Vining soil should be designed to maintain or increase the production of desirable forage plants, such as Indian ricegrass, bluebunch wheatgrass, and Thurber needlegrass. In addition to proper grazing management, controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The native plants on this association provide food and cover for mule deer, antelope, sage grouse, and jackrabbit.

Capability subclass VIe nonirrigated.

25—Kecko-Escalante complex, 2 to 4 percent slopes. These soils formed on terraces and fans in alluvium that has had additions of windblown material in the upper part. Elevations range from 4,300 to 4,400 feet.

This map unit is about 50 percent Kecko soil, 40 percent Escalante soil, and 10 percent included small areas of Vining fine sandy loam, Feltham loamy sand, Declo fine sandy loam, Clems fine sandy loam, and Paniogue sandy loam.

The Kecko soil is very deep and well drained. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F. The average frost-free season is between 115 and 140 days.

Typically, the surface layer of this Kecko soil is light brownish gray fine sandy loam about 9 inches thick. The subsoil is pale brown fine sandy loam and loam about 20 inches thick. The substratum is stratified white fine sandy loam, very pale brown loamy fine sand, and light gray fine sand to a depth of 65 inches or more.

Permeability is moderately rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is medium or slow from bare soil. The erosion hazard is moderate in irrigated areas and slight in nonirrigated areas. The hazard of soil blowing is moderate if the soil surface is bare.

The Escalante soil is very deep and well drained. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F. The average frost-free season is between 100 and 120 days.

Typically, the surface layer of this Escalante soil is light brownish gray fine sandy loam about 6 inches thick. The underlying material to a depth of 18 inches is moderately calcareous light brownish gray fine sandy loam. Below that, the underlying material is very strongly and strongly calcareous light brownish gray and light gray fine sandy loam to 65 inches or more.

Permeability is moderately rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate. The hazard of soil blowing is slight if the soil surface is bare.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few areas that are not irrigated are range and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce the hazard of soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, thickspike wheatgrass, big sagebrush, and tall green rabbitbrush.

Management of the native vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and thickspike wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically and mechanically may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIe irrigated, VIe nonirrigated.

26—Kecko-Escalante complex, 4 to 8 percent slopes. These soils formed on terraces and fans in alluvium that has had additions of windblown material in the upper part. Elevations range from 4,300 to 4,400 feet.

This map unit is about 50 percent Kecko soil, 40 percent Escalante soil, and 10 percent included small areas of Vining fine sandy loam, Feltham loamy sand, Declo fine sandy loam, and Clems fine sandy loam.

The Kecko soil is very deep and well drained. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F. The average frost-free season is between 115 and 140 days.

Typically, the surface layer of this Kecko soil is light brownish gray fine sandy loam about 9 inches thick. The subsoil is pale brown fine sandy loam and loam about 20 inches thick. The substratum is stratified white fine sandy loam, very pale brown loamy fine sand, and light gray fine sand to a depth of 65 inches or more.

Permeability is moderately rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. The soil may be subject to blowing in spring if the soil surface is bare.

The Escalante soil is very deep and well drained. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F. The average frost-free season is between 100 and 120 days.

Typically, the surface layer of this Escalante soil is light brownish gray fine sandy loam about 6 inches thick. The underlying material to a depth of 18 inches is moderately calcareous light brownish gray fine sandy loam. Below that, it is very strongly and strongly calcareous light brownish gray and light gray fine sandy loam to 65 inches or more.

Permeability is moderately rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. Soil blowing may be a hazard if the soil surface is bare.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. The few areas that are not irrigated are range and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain

stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable practices that may help to control erosion. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, thickspike wheatgrass, big sagebrush, and tall green rabbitbrush.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and thickspike wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, VIe nonirrigated.

27—Kecko-Escalante complex, 8 to 12 percent slopes. These soils formed on terraces and fans in alluvium that has had additions of windblown material in the upper part. Elevations range from 4,300 to 4,400 feet.

This map unit is about 50 percent Kecko soil, 40 percent Escalante soil, and 10 percent included small areas of Vining fine sandy loam, Feltham loamy sand, Declo fine sandy loam, and Clems fine sandy loam.

The Kecko soil is very deep and well drained. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F. The average frost-free season is between 115 and 140 days.

Typically, the surface layer of this Kecko soil is light brownish gray fine sandy loam about 9 inches thick. The subsoil is pale brown fine sandy loam and loam about 20 inches thick. The substratum is stratified white fine sandy loam, very pale brown loamy fine sand, and light gray fine sand to a depth of 65 inches or more.

Permeability is moderately rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. Soil blowing may be a hazard if the soil surface is bare.

The Escalante soil is very deep and well drained. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F. The average frost-free season is between 100 and 120 days.

Typically, the surface layer of this Escalante soil is light brownish gray fine sandy loam about 6 inches thick. The underlying material to a depth of 18 inches is moderately calcareous light brownish gray fine sandy loam. Below that, it is very strongly and strongly calcareous light brownish gray and light gray fine sandy loam to a depth of 65 inches or more.

Permeability is moderately rapid. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. Soil blowing may be a hazard in spring if the soil surface is left bare.

This unit is used mainly for irrigated hay, pasture, and small grain. The few nonirrigated areas are range and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 3 years of alfalfa for hay or grasses and legumes for pasture, 1 year of winter wheat, 1 year of spring grain, and then 1 year of spring grain with hay or pasture seeded with the grain or in the grain stubble.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, thickspike wheatgrass, and big sagebrush.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and thickspike wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IVe irrigated, VIe nonirrigated.

28—Kucera silt loam, steep. This very deep, well drained soil formed in thick loess on northerly slopes at elevations of about 4,000 to 5,500 feet. Slopes range from about 20 to 30 percent. The average annual precipitation is about 14 inches, including about 4 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 100 and 120 days.

Up to about 5 percent of this map unit is included small areas of Neeley silt loam, Newdale silt loam, and Lanoak silt loam.

Typically, the surface layer of this Kucera soil is grayish brown silt loam about 28 inches thick. The subsoil is grayish brown silt loam about 13 inches thick. The substratum is moderately calcareous light brownish gray silt loam to a depth of 65 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

This unit is used mainly for nonirrigated small grain and range. The areas that are farmed are generally in strips and irregularly shaped areas on the northerly slopes. They are generally not large enough for a practical separate crop rotation. The crop rotation in use is a winter wheat-fallow rotation.

In dryfarmed areas, stubble mulch tillage and contour or cross-slope farming help to control erosion. Fall chiseling across the slope can help to catch and reduce winter moisture runoff. This unit is best suited to pasture or range.

The native vegetation is mainly bluebunch wheatgrass, Idaho fescue, western wheatgrass, big sagebrush, and antelope bitterbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Idaho fescue, western wheatgrass, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Whitmar bluebunch wheatgrass, Topar pubescent wheatgrass, Luna pubescent wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass IVe nonirrigated.

29—Kucera silt loam, very steep. This very deep, well drained soil formed in thick loess on northerly slopes at elevations of about 4,200 to 5,500 feet. Slopes range from about 30 to 60 percent. The average annual precipitation is about 14 inches, including about 4 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Up to about 5 percent of this map unit is included small areas of Lanoak silt loam, Rexburg silt loam, and Wheelerville silt loam.

Typically, the surface layer of this Kucera soil is grayish brown silt loam about 28 inches thick. The subsoil is grayish brown silt loam about 13 inches thick. The substratum is moderately calcareous light brownish gray silt loam to a depth of 65 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

This unit is almost entirely range. The native vegetation is mainly bluebunch wheatgrass, needlegrass, Idaho fescue, Nevada bluegrass, big sagebrush, and antelope bitterbrush. Proper grazing practices are essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or by burning is not generally suggested because of the erosion hazard that may be created. Managing brush mechanically and seeding are not generally suggested because of the steep slopes and the erosion hazard.

The native plants provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass VIIe nonirrigated.

30—Lanoak silt loam, 4 to 12 percent slopes. This very deep, well drained soil formed in thick loess on hills and ridges at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 16 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Rexburg silt loam, Newdale silt loam, Ricrest loam, Hondoho gravelly loam, and Hondoho cobbly loam and small areas of a soil that has volcanic ash or tuff, generally below a depth of 40 inches.

Typically, the surface layer of this Lanoak soil is dark grayish brown silt loam about 20 inches thick. The subsoil is grayish brown silt loam 25 inches thick. The sub-

stratum is moderately calcareous light brownish gray silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is high in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

This unit is used mainly for dryfarming. A few areas are range and wildlife habitat.

The dryfarmed areas are used mainly for small grain. A suitable rotation that is being used successfully is alternate years of winter wheat and spring barley. Using this annual cropping system along with minimum tillage reduces the risk of erosion.

In addition to minimum tillage, stubble mulch tillage and contour or cross-slope farming are suitable practices that help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Terrace and diversion systems can be established if needed to help control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, Idaho fescue, big sagebrush, and antelope bitterbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Luna pubescent wheatgrass, Greenar intermediate wheatgrass, and Manchar smooth brome are suitable for seeding.

The areas that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass IIIe nonirrigated.

31—Lanoak silt loam, 12 to 20 percent slopes. This very deep, well drained soil formed in thick loess on hills and ridges at elevations of 5,000 to 6,500 feet. The annual precipitation is about 16 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Rexburg silt loam, Newdale silt loam, Ricrest loam, Hondoho gravelly loam, and Hondoho cobbly loam and small areas of a soil that has volcanic ash or tuff, generally below a depth of 40 inches.

Typically, the surface layer of this Lanoak soil is dark grayish brown silt loam about 20 inches thick. The subsoil is grayish brown silt loam 25 inches thick. The substratum is moderately calcareous light brownish gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is high in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

This unit is used mainly for dryfarming. A few areas are range and wildlife habitat.

The dryfarmed areas are used mainly for small grain. A suitable rotation that is being used successfully is alternate years of winter wheat and spring barley. Using this annual cropping system along with minimum tillage reduces the risk of erosion.

In addition to minimum tillage, stubble mulch tillage and contour or cross-slope farming are suitable practices that help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, Idaho fescue, big sagebrush, and antelope bitterbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Luna pubescent wheatgrass, Greenar intermediate wheatgrass, and Manchar smooth brome are suitable for seeding.

The areas that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass IIIe nonirrigated.

32—Lanoak silt loam, 20 to 30 percent slopes. This very deep, well drained soil formed in thick loess on hills and ridges at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 16 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Rexburg silt loam, Newdale silt loam, Ricrest loam, Hondoho gravelly loam, and Hondoho cobbly loam and small areas of a soil that has volcanic ash or tuff, generally below a depth of 40 inches.

Typically, the surface layer of this Lanoak soil is dark grayish brown silt loam about 20 inches thick. The subsoil is grayish brown silt loam 25 inches thick. The substratum is moderately calcareous light brownish gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is high in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

This unit is used mainly for nonirrigated small grain. A few areas are range.

A rotation that is being used successfully is an annual cropping system with alternate years of winter wheat and spring barley. Using this annual cropping system along with minimum tillage reduces the risk of erosion.

In addition to minimum tillage, stubble mulch tillage and contour or cross-slope farming are suitable practices that help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Keeping grass on this soil about half the time also helps to control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, Idaho fescue, big sagebrush, and antelope bitterbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Seeding may be practical if the range is deteriorated. Luna pubescent wheatgrass, Greenar intermediate wheatgrass, Manchar smooth brome, and Regar smooth brome are suitable for seeding.

The areas that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass IVe nonirrigated.

33—Lanoak silt loam, 30 to 45 percent slopes. This very deep, well drained soil formed in thick loess on hills and ridges at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 16 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Up to about 10 percent of this map unit is included small areas of Rexburg silt loam, Newdale silt loam, Ricrest loam, Hondoho gravelly loam, and Hondoho cobbly loam and small areas of a soil that has volcanic ash or tuff, generally below a depth of 40 inches.

Typically, the surface layer of this Lanoak soil is dark grayish brown silt loam about 15 inches thick. The subsoil is grayish brown silt loam 28 inches thick. The substratum is moderately calcareous light brownish gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is high in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

This unit is almost entirely range and wildlife habitat. The native vegetation is mainly bluebunch wheatgrass, Idaho fescue, big sagebrush, and antelope bitterbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or by burning is not generally suggested because of the erosion hazard that may be created. Mechanical brush management and seeding are not generally suggested because of the steep slopes and the erosion hazard.

The native plants on this unit provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass VIe nonirrigated.

34—Manila-Dranyon association, hilly. These soils are on valley side slopes, alluvial fans, and mountain foot slopes at elevations of about 6,000 to 7,000 feet. Slopes range from 4 to 20 percent in areas of Manila loam and from 4 to 30 percent in areas of Dranyon loam. Both soils have slopes that are dominantly 10 to 20 percent and about 30 to 200 feet long.

This association is about 50 percent Manila soil and 30 percent Dranyon soil.

The remaining 20 percent of the association is included small areas of Ricrest loam, Lanoak silt loam, Hymas extremely stony loam, Moohoo gravelly loam, Pavohroo stony loam, a moderately deep soil over quartzite or sandstone, a shallow soil less than 20 inches deep over quartzite or sandstone, and a deep poorly drained soil around springs.

The Manila soil is very deep and well drained. It formed mainly in valley fill bordered by faulted mountain ridges. It occurs on all slope aspects. The average

annual precipitation is about 20 inches, including about 6 feet of snowfall. The average annual soil temperature is about 42 degrees F.

Typically, the surface layer of this Manila soil is dark grayish brown loam about 7 inches thick. The subsoil extends to a depth of more than 60 inches. It is grayish brown and brown silty clay loam to 19 inches and yellowish brown and pink silty clay below.

The Manila soil has slow permeability. The effective rooting depth is more than 60 inches. The available water capacity is high. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The Dranyon soil is very deep and well drained. It formed mainly in material weathered from fine-grained sandstone that has had varying additions of colluvium and loess from place to place. It is generally on the north and east slope aspects at the lower elevations and on any aspect at the higher elevations. The average annual precipitation is about 20 inches, including about 6 feet of snowfall. The average annual soil temperature is about 40 degrees F.

Typically, the surface layer of this Dranyon soil is dark grayish brown loam about 9 inches thick. The subsoil extends to a depth of 60 inches or more. It is grayish brown gravelly silt loam and brown and pale brown gravelly silty clay loam to 39 inches and pale brown clay loam below.

The Dranyon soil has moderate permeability in the surface layer and moderately slow permeability in the subsoil. The effective rooting depth is 60 inches or more. The available water capacity is high. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The native vegetation on the Manila soil is mainly bluebunch wheatgrass, Idaho fescue, and big sagebrush. The native vegetation on the Dranyon soil is open woodland, mainly aspen, and an understory of bluebunch wheatgrass, Idaho fescue, serviceberry, and antelope bitterbrush.

This association is used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation on the Manila soil should be designed to maintain or increase the production of bluebunch wheatgrass and Idaho fescue. Chemical brush management and then proper grazing practices may be needed in reestablishing forage production to its potential. Mechanical brush management and seeding are practical. Greenar intermediate wheatgrass, Luna pubescent wheatgrass, and Manchar smooth brome are suitable for seeding.

Management of the vegetation on the Dranyon soil should be designed to increase the production of bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. Chemical brush management and then proper grazing practices may be needed in reestablishing forage production to its potential. Mechanical brush management and seeding are practical where slopes are less than 20 percent. Greenar intermediate wheatgrass, Luna pubescent wheatgrass, and Manchar smooth brome are adapted species suitable for seeding.

The native plants on this association provide food and cover for mule deer, mountain quail, and ruffed grouse.

Capability subclass VIe nonirrigated.

35—McCarey-Rock outcrop complex, undulating. This complex is on basalt plains at elevations of about 4,500 to 5,500 feet. Slopes range from 0 to 12 percent, but are dominantly less than 8 percent. They are about 50 to 200 feet long.

This map unit is about 50 percent McCarey soil, 25 percent Rock outcrop, and 25 percent included small areas of soils similar to the McCarey soil but less than 20 inches deep or more than 40 inches deep. There are also some small, irregularly shaped playas. The soils in these playas are extremely variable in depth and have textures ranging from loam to silty clay loam.

The McCarey soil is moderately deep and well drained. It formed in loess and material weathered from basalt on basalt plains. The average annual precipitation is about 14 inches. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this McCarey soil is dark grayish brown loam about 5 inches thick. The subsoil is grayish brown and brown clay loam about 17 inches thick. The substratum is very strongly calcareous white loam that extends to the bedrock at a depth of 35 inches.

Permeability is moderately slow. The effective rooting depth is to the bedrock, which occurs at 20 to 40 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is slow. The erosion hazard is slight.

Rock outcrop consists mainly of bare basalt. Cracks, crevices, and pressure ridges are common. There is little vegetation, if any, present and the areas are inaccessible to livestock. Rock outcrop is mainly wildlife habitat.

The native vegetation on the McCarey soil is mainly bluebunch wheatgrass, antelope bitterbrush, and big sagebrush.

This unit is not suited to farming. It is used mainly for livestock grazing and wildlife habitat. Proper grazing practices are essential to maintain or improve the plant cover.

Management of the vegetation on the McCarey soil should be designed to increase the production of desirable forage plants, such as bluebunch wheatgrass and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or by burning may be beneficial in selected areas. Mechanical brush management and seeding may be practical in selected areas. Whitmar bluebunch wheatgrass,

Sherman big bluegrass, and Topar pubescent wheatgrass are suitable for seeding.

The native plants on the McCarey soil provide food and cover for mule deer, jackrabbit, sage grouse, and antelope.

Capability subclass VIs nonirrigated.

36—McDole-Parehat complex, 0 to 3 percent slopes. These soils are on bottom lands, lower alluvial fans, and low terraces. They formed in alluvium derived from loess at elevations of about 4,200 to 4,800 feet.

This map unit is about 60 percent McDole soil, 30 percent Parehat soil, and l0 percent included small areas of Pocatello silt loam, Neeley silt loam, Declo loam, Paniogue loam, a soil that is similar to the Portneuf soil but has more profile development, and some very small areas of saline-alkali soils.

The McDole soil is very deep and well drained. It is on bottom lands, the lower part of fans, and low terraces. The average annual precipitation is about 12 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Typically, the surface layer of this McDole soil is slightly and moderately calcareous grayish brown silt loam about 12 inches thick. The underlying material is moderately calcareous light brownish gray silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight.

The Parehat soil is very deep and somewhat poorly drained. It is on bottom lands and low terraces. The average annual precipitation is about 12 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 110 and 140 days.

Typically, the surface layer of this Parehat soil is moderately calcareous grayish brown silt loam about 10 inches thick. The underlying material is moderately calcareous light brownish gray silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The water table may fluctuate between depths of 24 and 48 inches in spring. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. A few nonirrigated areas are used for small grain, range, and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beets rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage help to maintain or improve the soil structure and to reduce compaction.

The native vegetation on McDole soil is mainly bluebunch wheatgrass, western wheatgrass, and big sagebrush. The native vegetation on the Parehat soil is mainly tufted hairgrass, clover, and sedge. Proper grazing practices are essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, Whitmar bluebunch wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbits and sage grouse.

Capability subclass IIc irrigated, IVc nonirrigated.

37—Mike extremely stony silt loam, steep. This shallow well drained soil formed in a thin mantle of loess over basalt bedrock on highly dissected basalt plateaus at elevations of about 4,500 to 6,000 feet. Slopes range from about 10 to 45 percent and are generally about 50 to 300 feet long. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 44 degrees F.

Up to 10 percent of this map unit is included small areas of Tenno very stony loam, Newdale silt loam, and Rock outcrop.

Typically, the surface layer of this Mike soil is brown extremely stony silt loam about 5 inches thick. The subsoil is moderately calcareous pale brown loam about 7 inches thick. The substratum is very strongly calcareous white loam to basalt bedrock at 18 inches.

Permeability is moderate. The effective rooting depth is 10 to 20 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. The surface runoff is very rapid from bare soil. The erosion hazard is very high.

This unit is used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is essential to maintain or improve the plant cover.

The native vegetation is mainly big sagebrush, bluebunch wheatgrass, slender wheatgrass, needlegrass, and prairie junegrass.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, western wheatgrass, and needlegrass. Brush management by proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or by burning is not generally suggested because of the erosion hazard that may be created. Mechanical brush management and seeding are not practical because of the extremely stony surface layer.

The native plants on this unit provide food and cover for mule deer, sage grouse, mountain quail, and jackrabbit.

Capability subclass VIIs nonirrigated.

38—Moohoo-Pavohroo complex, very steep. These soils are on mountain ridges and foot slopes at elevations of about 6,000 to 8,000 feet. The slopes are dominantly 20 to 60 percent and 50 to 300 feet long.

This map unit is 40 percent Moohoo gravelly loam and 40 percent Pavohroo stony loam. Included are small areas of Hymas extremely stony loam, Sheege extremely stony loam, Ricrest loam, Ridgecrest stony loam, Dranyon loam, and Rock outcrop.

The Moohoo soil is deep and well drained. It formed in colluvium and material weathered from quartzite or sandstone that in places has had additions of loess in the upper part. This soil is generally on mountain ridges and foot slopes with northeast aspects. The average annual precipitation is about 20 inches, including about 7 feet of snowfall. The average annual soil temperature is about 40 degrees F.

Typically, the surface layer of this Moohoo soil is dark gray gravelly loam about 16 inches thick. The underlying material is light brownish gray very gravelly loam to a depth of 30 inches and light yellowish brown very gravelly loam to about 56 inches. Sandstone bedrock is at 56 inches.

The Moohoo soil has moderate permeability. The effective rooting depth is 40 to 60 inches. The available water capacity is moderate. Surface runoff is extremely rapid from bare soil. The erosion hazard is extremely high if the vegetation is disturbed.

The Pavohroo soil is deep and well drained. It formed in colluvium and material weathered from limestone that in places has had additions of loess in the upper part. This soil is generally on mountain ridges and foot slopes with north and east aspects. The average annual precipitation is about 20 inches, including about 7 feet of snowfall. The average annual soil temperature is about 40 degrees F.

Typically, the surface layer of this Pavohroo soil is dark grayish brown stony loam and loam about 14 inches thick. The subsoil is brown loam and pale brown clay loam and loam to a depth of about 38 inches. The substratum is pale brown stony loam to about 48 inches. Limestone bedrock is at 48 inches.

The Pavohroo soil has moderate permeability in the surface layer and the substratum and moderately slow permeability in the subsoil. The effective rooting depth is 40 to 60 inches. The available water capacity is moderate. Surface runoff is extremely rapid from bare soil. The erosion hazard is extremely high if the vegetation is disturbed.

The native vegetation on the Moohoo and Pavohroo soils is mainly Douglas-fir and aspen and an understory and small openings of pine needlegrass, elk sedge, western snowberry, bluebunch wheatgrass, Idaho fescue, and mountain brome.

This unit is used mainly as wildlife habitat and watershed. The soils are poor for livestock grazing because of the low palatability and limited amount of forage produced. The chief restrictions in timber production are the slow growth rate, the erosion hazard, the inaccessibility, and the small stands.

Management of the vegetation should be designed to maintain or improve the quality of the watershed and wildlife habitat. It should also include prevention and control of insect and disease outbreaks in the Douglas-fir stands. There is a limited potential for timber production if a market is established.

The native plants on this unit provide food and cover for mule deer, elk, mountain quail, California quail, ruffed grouse, and Franklin's grouse.

Capability subclass VIIe nonirrigated.

39—Neeley silt loam, 0 to 2 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of about 4,300 to 5,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam, Portneuf silt loam, Neeley variant soils, Wheeler silt loam, and a soil that is similar to the Portneuf soil but has more profile development and occupies swales and low spots mainly along and near the Bingham County line.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to

45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. If left bare, this soil may be subject to blowing in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay and pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass.

Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, Whitmar bluebunch wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIc irrigated, IIIc nonirrigated.

40—Neeley silt loam, 2 to 4 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of about 4,300 to 5,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam, Portneuf silt loam, Neeley variant soils, Wheeler silt loam, and a soil that is similar to the Portneuf soil but has more profile development and occupies swales and low spots, mainly along and near the Bingham County line.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is medium or slow from bare soil. The erosion hazard is moderate where the soil is irrigated and slight where not irrigated. If the soil is left bare in spring, soil blowing may be a slight hazard.

This unit is used for irrigated hay, pasture, potatoes (fig. 5), sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass.

Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if

the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, Whitmar bluebunch wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIe irrigated, IIIc nonirrigated.

41—Neeley silt loam, 4 to 8 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of about 4,300 to 5,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam, Portneuf silt loam, Neeley variant soils, Wheeler silt loam, and a soil that is similar to the Portneuf soil but has more profile development and occupies swales and low spots, mainly along and near the Bingham County line.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, Whitmar bluebunch wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, IIIe nonirrigated.

42—Neeley silt loam, 8 to 12 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of about 4,300 to 5,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam, Portneuf silt loam, Neeley variant soils, and Wheeler silt loam.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in the spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commerical fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming can help to control erosion. Fall chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Terraces and diversion systems may be practical where needed to control erosion. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, slender wheatgrass, western wheatgrass, and antelope bitterbrush.

Brush management by proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass and Sherman big bluegrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IVe irrigated, IIIe nonirrigated.

43—Neeley silt loam, 0 to 4 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of about 4,300 to 5,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days. This Neeley soil was mapped more broadly and with a greater range in slope than some of the other Neeley soils.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam, Portneuf silt loam, Wheeler silt loam, and McDole silt loam along drainageways.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is medium or slow from bare soil. The erosion hazard is moderate where the soil is irrigated and slight where not irrigated. If the soil surface is bare, soil blowing may be a hazard in the spring.

This soil, which was originally used mainly for dryfarming, is now rapidly being brought under irrigation in many areas. Where irrigated, it is used for hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay and pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then alfalfa for hay and pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used chiefly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass.

Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass and Sherman big bluegrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIe irrigated, IIIe nonirrigated.

44—Neeley silt loam, 4 to 12 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of about 4,300 to 5,500 feet.

The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days. This Neeley soil was mapped more broadly and with a greater range in slope than some of the other Neeley soils.

Up to about 5 percent of this map unit is included small areas of Pocatello silt loam and Wheeler silt loam.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

This soil, which was originally used mainly for dryfarming, is now rapidly being brought under irrigation in many areas. Where irrigated, it is used for hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage, minimum tillage, and contour or cross slope farming help to control erosion. Fall chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Terraces and diversion systems may be practical where needed to control erosion. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass.

Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, Whitmar bluebunch wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IVe irrigated, IIIe nonirrigated.

45—Neeley silt loam, 12 to 20 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of about 4,300 to 5,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days. This Neeley soil was mapped more broadly and with a greater range in slope than some of the other Neeley soils.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam and Wheeler silt loam.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used almost entirely for dryfarming and range. The dryfarmed areas are used mainly for small grain. An example of a suitable crop rotation in the dryfarmed areas is alternate years of winter wheat and fallow.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming are suitable practices that help to control erosion. Fall chiseling across the slope helps catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass and big sagebrush (fig. 6). Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants such as bluebunch wheatgrass.

Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, Whitmar bluebunch wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IVe nonirrigated.

46—Neeley silt loam, 20 to 30 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of about 4,300 to 5,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days. This Neeley soil was mapped more broadly and with a greater range in slope than some of the other Neeley soils.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam, Wheeler silt loam, and Kucera silt loam.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used almost entirely for dryfarming and range. The dryfarmed areas are used mainly for small grain.

An example of a suitable crop rotation in the dryfarmed areas is alternate years of winter wheat and fallow.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming are suitable practices that help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing. Keeping grass on this soil about half the time also helps to control erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, western wheatgrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and western wheatgrass.

Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, Whitmar bluebunch wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IVe nonirrigated.

47—Neeley-Neeley Variant complex, 2 to 4 percent slopes. These soils formed in loess on undulating basalt plains at elevations of about 4,300 to 5,000 feet.

This map unit is about 60 percent Neeley soil, 30 percent Neeley variant soil, and 10 percent included small areas of Pocatello silt loam, Portneuf silt loam, Portino silt loam, Portino stony loam, Trevino stony loam, Rock outcrop, and a soil in swales and low spots that is similar to the Portneuf soil but has more profile development.

The Neeley soil is very deep and well drained. It formed in thick loess. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate. If the soil surface is bare, soil blowing may be a hazard in spring.

The Neeley variant soil is moderately deep and well drained. It formed in loess on basalt plains. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is

about 50 degrees F. The average frost-free season is between 100 and 140 days.

Typically, the surface layer of this Neeley variant soil is grayish brown silt loam about 7 inches thick. The subsoil is slightly calcareous light brownish gray silt loam about 10 inches thick. The substratum is strongly calcareous light gray silt loam to basalt bedrock at about 36 inches.

Permeability is moderate. The effective rooting depth is 20 to 40 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain.

An example of a suitable crop rotation is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

This unit provides food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge.

Capability subclass IIIe irrigated.

48—Neeley-Neeley Variant complex, 4 to 8 percent slopes. These soils formed in loess on undulating basalt plains at elevations of about 4,300 to 5,000 feet.

This map unit is about 55 percent Neeley soil, 30 percent Neeley variant soil, and 15 percent included small areas of Pocatello silt loam, Portneuf silt loam, Portino silt loam, Portino stony loam, Trevino stony loam, Rock outcrop, and a soil in swales and low spots that is similar to the Portneuf soil but has more profile development.

The Neeley soil is very deep and well drained. It formed in thick loess. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing may be a hazard in spring.

The Neeley variant soil is moderately deep and well drained. It formed in loess on basalt plains. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Typically, the surface layer of this Neeley variant soil is grayish brown silt loam about 7 inches thick. The subsoil is slightly calcareous light brownish gray silt loam about 10 inches thick. The substratum is strongly calcareous light gray silt loam to basalt bedrock at about 36 inches.

Permeability is moderate. The effective rooting depth is 20 to 40 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain.

An example of a suitable crop rotation is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

This unit provides food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge.

Capability subclass IIIe irrigated.

49—Neeley-Neeley Variant complex, 8 to 12 percent slopes. These soils formed in loess on undulating basalt plains at elevations of about 4,300 to 5,000 feet.

This map unit is about 55 percent Neeley soil, 30 percent Neeley variant soil, and 15 percent included small areas of Pocatello silt loam, Portneuf silt loam, Portino silt loam, Portino stony loam, Trevino stony loam, and Rock outcrop.

The Neeley soil is very deep and well drained. It formed in thick loess. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Typically, the surface layer of this Neeley soil is grayish brown silt loam about 10 inches thick. The subsoil is light brownish gray silt loam about 6 inches thick. The substratum is strongly calcareous light gray silt loam to a depth of 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

The Neeley variant soil is moderately deep and well drained. It formed in loess on basalt plains. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Typically, the surface layer of this Neeley variant soil is grayish brown silt loam about 7 inches thick. The subsoil is slightly calcareous light brownish gray silt loam about 10 inches thick. The substratum is strongly calcareous light gray silt loam to basalt bedrock at about 36 inches.

Permeability is moderate. The effective rooting depth is 20 to 40 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain.

An example of a suitable crop rotation in irrigated areas is 3 years of alfalfa for hay or grasses and legumes for pasture, 1 year of winter wheat, 1 year of spring grain, and then 1 year of spring grain with alfalfa for hay or pasture seeded with the grain or in the grain stubble.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

This unit provides cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge.

Capability subclass IVe irrigated.

50—Newdale silt loam, 0 to 4 percent slopes. This very deep, well drained soil formed in thick loess in broad valleys and on plains at elevations of 4,700 to 6,000 feet. The average annual precipitation is about 12 inches, including about 4 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 100 and 126 days.

Up to about 10 percent of this map unit is included small areas of Ammon silt loam, Hondoho gravelly loam, Rexburg silt loam, Arbone loam, Lanoak silt loam, Wheelerville silt loam, and a moderately deep soil underlain by volcanic ash or tuff.

Typically, the surface layer of this Newdale soil is grayish brown silt loam about 11 inches thick. The underlying material is strongly and very strongly calcareous pale brown silt loam to a depth of 31 inches, very strongly calcareous white silt loam with common hard nodules to 47 inches, and strongly calcareous very pale brown silt loam to 71 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight.

Nearly all of this unit is dryfarmed. It is used mainly for small grain. A suitable rotation is 1 year of winter wheat, 1 year of spring small grain, and 1 year of fallow (fig. 7). Some farmers are successfully using an annual small grain cropping system in which winter wheat and spring barley are planted in alternate years.

Stubble mulch tillage and minimum tillage are suitable practices that help to control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. This wildlife obtains food and shelter chiefly from cropland. Food must be close to shelter that provides protection from predators and inclement weather.

Capability subclass IIIc nonirrigated.

51—Newdale silt loam, 4 to 12 percent slopes. This very deep, well drained soil formed in thick loess in broad valleys and on plains at elevations of 4,700 to 6,000 feet. The average annual precipitation is about 12 inches, including about 4 feet of snowfall. The average

annual soil temperature is about 45 degrees F. The average frost-free season is between 100 and 126 days.

Up to about 10 percent of this map unit is included areas of Ammon silt loam, Hondoho gravelly loam, Rexburg silt loam, Arbone loam, Lanoak silt loam, Wheelerville silt loam, and a moderately deep soil underlain by volcanic ash or tuff.

Typically, the surface layer of this Newdale soil is grayish brown silt loam about 11 inches thick. The underlying material is strongly and very strongly calcareous pale brown silt loam to a depth of 31 inches, very strongly calcareous white silt loam with common hard nodules to 47 inches, and strongly calcareous very pale brown silt loam to 71 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

Nearly all of this unit is dryfarmed. It is used mainly for small grain. A suitable rotation is 1 year of winter wheat (fig. 8), 1 year of spring small grain, and 1 year of fallow. Some farmers are successfully using an annual cropping system in which winter wheat and spring barley are planted in alternate years.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming can help to control erosion. Terraces and diversion systems are practical where needed to control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. This wildlife obtains food and shelter chiefly from cropland. Food must be close to shelter that provides protection from predators and inclement weather.

Capability subclass IIIe nonirrigated.

52—Newdale silt loam, 12 to 20 percent slopes. This very deep, well drained soil formed in thick loess on hills and fans at elevations of 4,700 to 6,000 feet. The average annual precipitation is about 12 inches, including about 4 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 100 and 126 days.

Up to about 10 percent of this map unit is included small areas of Ammon silt loam, Hondoho gravelly loam, Rexburg silt loam, Arbone loam, Lanoak silt loam, Wheelerville silt loam, and a moderately deep soil underlain by volcanic ash or tuff.

Typically, the surface layer of this Newdale soil is grayish brown silt loam about 11 inches thick. The underlying material is strongly and very strongly calcareous pale brown silt loam to a depth of 31 inches, very strongly calcareous white silt loam with common hard nodules to 47 inches, and strongly calcareous very pale brown silt loam to 71 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

Nearly all of this unit is dryfarmed. It is used mainly for small grain. Some farmers are successfully using an annual cropping system with alternate years of winter wheat and spring barley.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. This wildlife obtains food and shelter primarily from cropland. Food must be close to shelter that provides protection from predators and inclement weather.

Capability subclass IIIe nonirrigated.

53—Newdale silt loam, 20 to 30 percent slopes. This very deep, well drained soil formed in thick loess on hills and fans at elevations of 4,700 to 6,000 feet. The average annual precipitation is about 12 inches, including about 4 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 100 and 126 days.

Up to about 10 percent of this map unit is included small areas of Ammon silt loam, Hondoho gravelly loam, Rexburg silt loam, Arbone loam, Lanoak silt loam, Wheelerville silt loam, and a moderately deep soil underlain by volcanic ash or tuff.

Typically, the surface layer of this Newdale soil is grayish brown silt loam about 11 inches thick. The underlying material is strongly and very strongly calcareous pale brown silt loam to a depth of 31 inches, very strongly calcareous white silt loam with common hard nodules to 47 inches, and strongly calcareous very pale brown silt loam to 71 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

This unit is used mainly for nonirrigated small grain. A few areas are range. Some farmers are successfully using an annual cropping system in which winter wheat and spring barley are planted in alternate years. Using this annual cropping system along with minimum tillage reduces the risk of erosion.

In addition to minimum tillage, stubble mulch tillage, and contour or cross-slope farming are suitable practices that help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Keeping grass on this soil about half the time also helps to control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, slender wheatgrass, western wheatgrass, big sagebrush, and antelope bitterbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, slender wheatgrass, western wheatgrass, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically, mechanically, or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass IVe nonirrigated.

54—Paniogue sandy loam, 2 to 4 percent slopes. This very deep, well drained soil is on terraces and fans at elevations of about 4,200 to 4,700 feet. It formed in mixed alluvium that has had additions of windblown material in the upper part. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo fine sandy loam, Kecko fine sandy loam, Escalante fine sandy loam, Declo loam, and Paniogue loam.

Typically, the surface layer of this Paniogue soil is grayish brown and light brownish gray sandy loam about 13 inches thick. The subsoil is strongly calcareous light gray loam about 21 inches thick. The substratum is multicolored, stratified loamy sand, sand, and gravel to a depth of more than 60 inches.

Permeability is moderately rapid in the surface layer, moderate in the subsoil, and rapid in the substratum. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is low in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used almost entirely for irrigated hay, pasture, potatoes, sugar beets, and small grain.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge.

Capability subclass IIIe irrigated.

55—Paniogue loam, 0 to 2 percent slopes. This very deep, well drained soil is on terraces and fans at elevations of about 4,200 to 4,700 feet. It formed in mixed alluvium that has had additions of windblown material in the upper part. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo fine sandy loam, Kecko fine sandy loam, Escalante fine sandy loam, Declo loam, and Paniogue sandy loam.

Typically, the surface layer of this Paniogue soil is strongly calcareous grayish brown and light brownish gray loam about 13 inches thick. The subsoil is strongly calcareous light gray loam about 21 inches thick. The substratum is multicolored, stratified loamy sand, sand, and gravel to a depth of more than 60 inches.

Permeability is moderate in the surface layer and the subsoil and rapid in the substratum. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. If the soil surface is bare, soil blowing can be a slight hazard in spring.

This unit is used almost entirely for irrigated hay, pasture, potatoes, sugar beets, and small grain.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge.

Capability subclass IIs irrigated.

56—Paniogue loam, 2 to 4 percent slopes. This very deep, well drained soil is on terraces and fans at elevations of about 4,200 to 4,700 feet. It formed in mixed alluvium that has had additions of windblown material in the upper part. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo fine sandy loam, Kecko fine sandy loam, Escalante fine sandy loam, Declo loam, and Paniogue sandy loam.

Typically, the surface layer of this Paniogue soil is strongly calcareous grayish brown and light brownish gray loam about 13 inches thick. The subsoil is strongly calcareous light gray loam about 21 inches thick. The substratum is multicolored, stratified loamy sand, sand, and gravel to a depth of more than 60 inches.

Permeability is moderate in the surface layer and the subsoil and rapid in the substratum. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used almost entirely for irrigated hay, pasture, potatoes, sugar beets, and small grain.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then alfalfa for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable practices that help to control erosion. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge.

Capability subclass IIe irrigated.

57—Paniogue complex, 4 to 12 percent slopes. These soils formed in mixed alluvium that has been somewhat reworked by wind in the upper part. They are on terraces and fans at elevations of about 4,200 to 4,700 feet.

This map unit is about 70 percent Paniogue loam, 25 percent Paniogue sandy loam, and 5 percent included small areas of Declo loam, Declo fine sandy loam, Kecko fine sandy loam, and Escalante fine sandy loam.

These Paniogue soils are very deep and well drained. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Typically, the surface layer of the Paniogue loam is strongly calcareous grayish brown and light brownish gray loam about 13 inches thick. The subsoil is strongly calcareous light gray loam about 21 inches thick. The substratum is multicolored, stratified loamy sand, sand, and gravel to a depth of more than 60 inches.

Permeability is moderate in the surface layer and the subsoil and rapid in the substratum. The effective rooting depth is more than 60 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

Typically, the surface layer of the Paniogue sandy loam is strongly calcareous grayish brown and light brownish gray sandy loam about 13 inches thick. The subsoil is strongly calcareous light gray and white silt loam and loam about 21 inches thick. The substratum is multicolored, stratified loamy sand, sand, and gravel to a depth of 60 inches.

Permeability is moderately rapid in the surface layer, moderate in the subsoil, and rapid in the substratum. The effective rooting depth is more than 60 inches. The avail-

able water capacity is moderate. The organic matter content is low in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. Slopes are generally only about 50 feet long. More gentle slopes are above and below. Managing these short slopes differently from the soil areas above and below is generally impractical.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge.

Capability subclass IVe irrigated.

58—Pits. Pits are open excavations from which sand and gravel have been removed. Most of the material was used in building construction and for road subgrading and surfacing. One pit is a remnant of gold dredging at Bonanza Bar. These pits have no value for farming.

Capability subclass VIIIs nonirrigated.

59—Pocatello silt loam, 2 to 4 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of 4,300 to 5,200 feet. The average annual precipitation is about 11 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to 8 percent of this map unit is included small areas of Neeley silt loam, Portneuf silt loam, Wheeler silt loam, and McDole silt loam along drainageways.

Typically the surface layer of this Pocatello soil is slightly calcareous light brownish gray silt loam about 6 inches thick. The underlying material is moderately calcareous pale brown silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is medium or slow from bare soil. The erosion hazard is moderate where the soil is irrigated and slight where not irrigated. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass.

Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIe irrigated, VIc nonirrigated.

60—Pocatello silt loam, 4 to 8 percent slopes. This very deep, well drained soil formed in thick loess on hills

and terraces at elevations of 4,300 to 5,200 feet. The average annual precipitation is about 11 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 5 percent of this map unit is included small areas of Neeley silt loam, Portneuf silt loam, and Wheeler silt loam.

Typically, the surface layer of this Pocatello soil is slightly calcareous light brownish gray silt loam about 6 inches thick. The underlying material is moderately calcareous pale brown silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then for hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, VIe nonirrigated.

61—Pocatello silt loam, 8 to 12 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of 4,300 to 5,200 feet. The average annual precipitation is about 11 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 5 percent of this map unit is included small areas of Neeley silt loam, Portneuf silt loam, and Wheeler silt loam.

Typically, the surface layer of this Pocatello soil is slightly calcareous light brownish gray silt loam about 6 inches thick. The underlying material is moderately calcareous pale brown silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming can help to control erosion. Fall chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Terraces and diversion systems may be practical where needed to control erosion. Plant residue should be left on the sur-

face if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IVe irrigated, VIe nonirrigated.

62—Pocatello silt loam, 0 to 4 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of 4,300 to 5,200 feet. The average annual precipitation is about 11 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days. This Pocatello soil was mapped more broadly and with a greater range in slope than some of the other Pocatello soils.

Up to 15 percent of this map unit is included small areas of Neeley silt loam, Portneuf silt loam, Wheeler silt loam, and McDole silt loam along drainageways.

Typically, the surface layer of this Pocatello soil is slightly calcareous light brownish gray silt loam about 6 inches thick. The underlying material is moderately calcareous pale brown silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is medium or slow from bare soil. The erosion hazard is moderate in areas where the soil is irrigated and slight where not irrigated. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit, which was originally used chiefly for dryfarming, is now rapidly being brought under irrigation in many areas. Where irrigated, it is used for hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management should be practiced to reduce leaching and erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIe irrigated, VIc nonirrigated.

63—Pocatello silt loam, 4 to 12 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of 4,300 to 5,200 feet. The average annual precipitation is about 11 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days. This Pocatello soil was mapped more broadly and with a greater range in slope than some of the other Pocatello soils.

Up to about 15 percent of this map unit is included small areas of Neeley silt loam, Portneuf silt loam, and Wheeler silt loam.

Typically, the surface layer of this Pocatello soil is slightly calcareous light brownish gray silt loam about 6 inches thick. The underlying material is moderately cal-

careous pale brown silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

This map unit, which was originally used chiefly for dryfarming, is now rapidly being brought under irrigation in many areas. It is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming help to control erosion. Fall chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Terraces and diversion systems may be practical where needed to control erosion. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IVe irrigated, VIe nonirrigated.

64—Pocatello silt loam, 12 to 20 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of 4,300 to 5,200 feet. The average annual precipitation is about 11 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days. This Pocatello soil was mapped more broadly and with a greater range in slope than some of the other Pocatello soils.

Up to 15 percent of this map unit is included small areas of Neeley silt loam, Wheeler silt loam, and Kucera silt loam.

Typically, the surface layer of this Pocatello soil is slightly calcareous light brownish gray silt loam about 6 inches thick. The underlying material is moderately calcareous pale brown silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used almost entirely for dryfarming and range. The dryfarmed areas are used mainly for small grain. An example of a suitable crop rotation in the dryfarmed areas is alternate years of winter wheat and fallow.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming help control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass VIe nonirrigated.

65—Pocatello silt loam, 20 to 30 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces at elevations of 4,300 to 5,200 feet. The average annual precipitation is about 11 inches, including about 3 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days. This Pocatello soil was mapped more broadly and with a greater range in slope than some of the other Pocatello soils.

Up to about 15 percent of this map unit is included small areas of Neeley silt loam, Wheeler silt loam, and Kucera silt loam.

Typically, the surface layer of this Pocatello soil is slightly calcareous light brownish gray silt loam about 6 inches thick. The underlying material is moderately calcareous pale brown silt loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used almost entirely for dryfarming and range. The dryfarmed areas are used mainly for small grain. An example of a suitable crop rotation in the dryfarmed areas is alternate years of winter wheat and fallow.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing. Keeping grass on this soil about half the time also helps to control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass VIe nonirrigated.

66—Portino stony loam, 2 to 4 percent slopes. This moderately deep, well drained soil formed in a loess mantle on basalt plains at elevations of about 4,200 to 4,700 feet. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Portino silt loam; Trevino stony loam; Portneuf silt loam, bedrock substratum; a soil in swales and low spots that is similar to the Portneuf soil but has more profile development; and Rock outcrop.

Typically, the surface layer of this Portino soil is slightly and moderately calcareous light brownish gray stony loam about 12 inches thick. The underlying material is strongly calcareous white and light gray silt loam to basalt bedrock at about 34 inches.

Permeability is moderate. The effective rooting depth is 20 to 40 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. Surface runoff is medium or slow from bare soil. The erosion hazard is moderate where the soil is irrigated and slight where not irrigated. If the soil surface is bare, soil blowing may be a slight hazard in spring.

Stones in the surface layer of this soil interfere with tillage to some degree, but do not prohibit it. The unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming, range, and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management should be practiced to reduce leaching and erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, western wheatgrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, VIs nonirrigated.

67—Portino stony loam, 4 to 8 percent slopes. This moderately deep, well drained soil formed in a loess mantle on basalt plains at elevations of about 4,200 to 4,700 feet. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Portino silt loam; Trevino stony loam; Portneuf silt loam, bedrock substratum; a soil in swales and low spots that is similar to the Portneuf soil but has more profile development; and Rock outcrop.

Typically, the surface layer of this Portino soil is slightly and moderately calcareous light brownish gray stony loam about 12 inches thick. The underlying material is strongly calcareous white and light gray silt loam to basalt bedrock at a depth of about 34 inches.

Permeability is moderate. The effective rooting depth is 20 to 40 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing may be a hazard in spring.

Stones in the surface layer of this soil interfere with tillage to some degree, but do not prohibit it. The unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming, range, and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, western wheatgrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, VIe nonirrigated.

68—Portino silt loam, 2 to 4 percent slopes. This moderately deep, well drained soil formed in a loess mantle on basalt plains at elevations of about 4,200 to 4,700 feet. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Portino stony loam; Trevino stony loam; Portneuf silt loam, bedrock substratum; a soil in swales and low spots that is similar to the Portneuf soil but has more profile development; and Rock outcrop.

Typically, the surface layer of this Portino soil is slightly and moderately calcareous light brownish gray silt loam about 12 inches thick. The underlying material is strongly calcareous white and light gray silt loam to basalt bedrock at about 34 inches.

Permeability is moderate. The effective rooting depth is 20 to 40 inches. The available water capacity is mod-

erate. The organic matter content is moderate in the surface layer. Surface runoff is medium or slow from bare soil. The erosion hazard is moderate where the soil is irrigated and slight where not irrigated. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming, range, and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used chiefly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, western wheatgrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass.

Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass; Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, VIc nonirrigated.

69—Portino silt loam, 4 to 8 percent slopes. This moderately deep, well drained soil formed in a loess mantle on basalt plains at elevations of about 4,200 to 4,700 feet. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Portino stony loam; Trevino stony loam; Portneuf silt loam, bedrock substratum; a soil in swales and low spots that is similar to the Portneuf soil but has more profile development; and Rock outcrop.

Typically, the surface layer of this Portino soil is slightly and moderately calcareous light brownish gray silt loam about 12 inches thick. The underlying material is strongly calcareous white and light gray silt loam to basalt bedrock at about 34 inches.

Permeability is moderate. The effective rooting depth is 20 to 40 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is used mainly for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming, range, and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used chiefly for small grain. A winter wheat-fallow rotation is suitable in these areas.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, western wheatgrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is

deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, VIe nonirrigated.

70—Portino-Trevino-Rock outcrop complex, rolling. This map unit is on basalt plains at elevations of about 4,200 to 4,700 feet. Slopes range from 0 to 12 percent and are generally about 50 to 300 feet long.

This map unit is about 40 percent Portino soil, 25 percent Trevino soil, and 20 percent Rock outcrop. The remaining 15 percent is included small areas of Portneuf silt loam, bedrock substratum; a shallow soil that is similar to the Trevino soil but has less profile development; and a soil that is similar to the Portneuf soil but has more profile development.

The Portino soil is moderately deep and well drained. It formed in a loess mantle on basalt plains. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer of this Portino soil is light brownish gray stony loam about 12 inches thick. The underlying material is strongly calcareous white silt loam to about 24 inches and strongly calcareous light gray silt loam to basalt bedrock at about 34 inches.

The Portino soil has moderate permeability. The effective rooting depth is 20 to 40 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate.

The Trevino soil is shallow and well drained. It formed in a thin mantle of loess on basalt plains. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer and the subsoil of this Trevino soil are light brownish gray stony loam about 12 inches thick. The substratum is moderately calcareous light gray stony loam to basalt bedrock at about 19 inches.

The Trevino soil has moderate permeability. The effective rooting depth is 8 to 20 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate.

Rock outcrop consists mainly of bare basalt. Cracks, crevices, and pressure ridges are common. There is little, if any, vegetation. The areas of Rock outcrop are inaccessible to livestock. They are mainly wildlife habitat.

The native vegetation on the Portino soil is mainly bluebunch wheatgrass, Thurber needlegrass, western wheatgrass, big sagebrush, and tall green rabbitbrush. The native vegetation on the Trevino soil is mainly bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, and low sagebrush.

These soils are used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation on the Portino and Trevino soils should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically may be beneficial in selected areas. Mechanical brush management and seeding are impractical because of the stony surface layer.

The native plants on the Portino and Trevino soils provide food and cover for mule deer, antelope, sage grouse, and jackrabbit.

Capability subclass VIIe nonirrigated.

71—Portneuf silt loam, bedrock substratum, 0 to 2 percent slopes. This deep, well drained soil formed in loess on basalt plains at elevations of about 4,200 to 4,700 feet. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo loam, Pocatello silt loam, Portino silt loam, Trevino stony loam, and a soil that is similar to the Portneuf soil but has more profile development and occupies swales and low spots chiefly along and near the Bingham County line.

Typically the surface layer of this Portneuf soil is slightly calcareous light brownish gray silt loam about 9 inches thick. The subsoil is slightly calcareous light brownish gray silt loam about 6 inches thick. The upper part of the substratum to a depth of about 36 inches is strongly calcareous light gray silt loam with common hard nodules. The lower part is moderately calcareous light brownish gray silt loam to basalt bedrock at about 57 inches.

Permeability is moderate. The effective rooting depth is 40 to 60 inches. The available water capacity is moderate where bedrock is at a depth of less than 50 inches and high where it is deeper than 50 inches. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain (fig. 9). Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The nonirrigated areas are used mainly for grazing and small grain. A winter wheat-fallow rotation is used in the areas that are dryfarmed, but yields are marginal.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIc irrigated, VIc nonirrigated.

72—Portneuf silt loam, bedrock substratum, 2 to 4 percent slopes. This deep, well drained soil formed in loess on basalt plains at elevations of about 4,200 to 4,700 feet. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo loam, Pocatello silt loam, Portino silt loam, Trevino stony loam, and a soil that is similar to the Portneuf soil but has more profile development and occupies swales and low spots chiefly along and near the Bingham County line.

Typically, the surface layer of this Portneuf soil is slightly calcareous light brownish gray silt loam about 9 inches thick. The subsoil is slightly calcareous light brownish gray silt loam about 6 inches thick. The upper part of the substratum to a depth of about 6 inches is strongly calcareous light gray silt loam with common hard nodules. The lower part is moderately calcareous light brownish gray silt loam to basalt bedrock at about 57 inches.

Permeability is moderate. The effective rooting depth is 40 to 60 inches. The available water capacity is moderate where bedrock is at a depth of less than 50 inches and high where it is deeper than 50 inches. The organic matter content is moderate in the surface layer. Surface runoff is medium or slow from bare soil. The erosion hazard is moderate where the soil is irrigated and slight where not irrigated. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. The corrugation or furrow methods may be used for row crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The nonirrigated areas are used mainly for rangeland and small grain. A winter wheat-fallow rotation is used in the areas that are dryfarmed, but yields are marginal.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan

crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIe irrigated, VIc nonirrigated.

73—Portneuf silt loam, bedrock substratum, 4 to 8 percent slopes. This deep, well drained soil formed in loess on basalt plains at elevations of about 4,200 to 4,700 feet. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Declo loam, Pocatello silt loam, Portino silt loam, Trevino stony loam, and a soil that is similar to the Portneuf soil but has more profile development and occupies swales and low spots primarily along and near the Bingham County line.

Typically, the surface layer of this Portneuf soil is slightly calcareous light brownish gray silt loam about 9 inches thick. The subsoil is slightly calcareous light brownish gray silt loam about 6 inches thick. The upper part of the substratum to a depth of about 36 inches is strongly calcareous light gray silt loam with common hard nodules. The lower part is moderately calcareous light brownish gray silt loam to basalt bedrock at about 57 inches.

Permeability is moderate. The effective rooting depth is 40 to 60 inches. The available water capacity is moderate where bedrock is at a depth of less than 50 inches and high where it is deeper than 50 inches. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for dryfarming and range.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grass and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The nonirrigated areas are used mainly for rangeland and small grain. A winter wheat-fallow rotation is used in the areas that are dryfarmed, but yields are marginal. Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable management practices. Chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is needed to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices are sometimes needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IIIe irrigated, VIe nonirrigated.

74—Portneuf-Quincy complex, rolling. These soils formed in thick deposits of windblown material on dissected basalt plains at elevations of about 4,200 to 4,500 feet. The slopes of the Portneuf soil range from 0 to 8 percent, and those of the Quincy soil range from 4 to 20 percent.

This map unit is about 60 percent Portneuf soil, 30 percent Quincy soil, and 10 percent included small areas of Feltham loamy sand, Declo fine sandy loam, Kecko fine sandy loam, Clems fine sandy loam, Vining fine sandy loam, Wapi loamy fine sand, and Rock outcrop.

The Portneuf soil is very deep and well drained. It formed in thick loess that has a layer of sandy windblown material on the surface. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F.

Typically, the surface layer and the subsoil of this Portneuf soil are brown fine sandy loam about 14 inches thick. The underlying material is strongly calcareous white and light gray silt loam to more than 60 inches. There are common hard nodules in the upper part of the underlying material.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is medium from bare soil. The ero-

sion hazard is moderate. If the soil surface is bare in spring, soil blowing is a hazard.

The Quincy soil is very deep and excessively drained. It formed in thick deposits of sandy windblown material of mixed origin. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the profile of this Quincy soil is brown and grayish brown fine sand to a depth of more than 60 inches.

Permeability is rapid. The effective rooting depth is more than 60 inches. The available water capacity is low. The organic matter content is low in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. If the soil surface is bare, soil blowing is a very high hazard.

This unit is used mainly for range and wildlife habitat. The native vegetation on the Portneuf soil is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, needleandthread, and Indian ricegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Seeding may be practical in selected areas if the range is deteriorated. Nordan crested wheatgrass and Siberian wheatgrass are suitable for seeding.

The native vegetation on this unit provide food and cover for mule deer, antelope, sage grouse, and jackrabbit.

Capability subclass VIe nonirrigated.

75—Quincy fine sand, rolling. This very deep, excessively drained soil formed in thick deposits of sandy windblown material of mixed origin on dissected basalt plains and terraces. Elevations range from about 4,200 to 4,500 feet. Slopes are 0 to 20 percent. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Up to about 10 percent of this map unit is included small areas of Feltham loamy sand, Portneuf fine sandy loam, Declo fine sandy loam, Kecko fine sandy loam, Clems fine sandy loam, Vining fine sandy loam, Wapi loamy fine sand, and Rock outcrop.

Typically, the profile of this Quincy soil is brown and grayish brown fine sand to a depth of more than 60 inches.

Permeability is rapid. The effective rooting depth is more than 60 inches. The available water capacity is low. The organic matter content is low in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. If the soil surface is bare, the soil blowing hazard is very high.

This unit is almost entirely range and wildlife habitat. The native vegetation is mainly needleandthread, Indian ricegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain as much plant cover as possible to stabilize this soil and reduce soil blowing.

The native vegetation on this unit provides food and cover for jackrabbit and sage grouse.

Capability subclass VIIe nonirrigated.

76—Quincy loamy fine sand, 4 to 12 percent slopes. This very deep, somewhat excessively drained soil formed in thick deposits of windblown sandy material of mixed origin on dissected basalt plains and terraces. Elevations range from about 4,200 to 4,500 feet. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Feltham loamy sand, Declo fine sandy loam, Kecko fine sandy loam, Clems fine sandy loam, Escalante fine sandy loam, Quincy fine sand, and Portneuf fine sandy loam.

Typically, the profile of this Quincy soil is brown and grayish brown loamy fine sand to a depth of more than 60 inches.

Permeability is rapid. The effective rooting depth is more than 60 inches. The available water capacity is low. The organic matter content is low in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is high. If the soil surface is bare, the soil blowing hazard is very high.

This unit, which was originally used mainly for range, is now rapidly being brought under irrigation in many areas. Where irrigated, it is used for hay, pasture, potatoes, sugar beets, and small grain. The nonirrigated areas are range and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

Commercial fertilizer is generally needed in addition to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable practices that help to control erosion. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing. A

fall planted cover crop may also help in reducing soil blowing.

The native vegetation is mainly Indian ricegrass, needleandthread, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as Indian ricegrass and needleandthread. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential.

The areas of this unit that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, jackrabbit, and sage grouse.

Capability subclass IVe irrigated, VIIe nonirrigated.

77—Quincy-Declo-Vining association, rolling. These soils are on dissected basalt plains and terraces at elevations of about 4,200 to 4,400 feet. The slopes of the Quincy soil range from 4 to 20 percent. This soil generally occurs as scattered dunes, stringers, or hummocks throughout the areas of Declo and Vining soils. The slopes of the Declo and Vining soils range from 0 to 8 percent.

This association is about 40 percent Quincy soil, 30 percent Declo soil, and 20 percent Vining soil. The remaining 10 percent is included small areas of Feltham loamy sand, Portneuf fine sandy loam, Kecko fine sandy loam, Clems fine sandy loam, Wapi loamy fine sand, Portino stony loam, Trevino stony loam, and Rock outcrop.

This Quincy soil is very deep and somewhat excessively drained. It formed in thick deposits of windblown material of mixed origin on dissected basalt plains and terraces. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the profile of this Quincy soil is brown and grayish brown loamy fine sand to a depth of more than 60 inches.

Permeability is rapid. The effective rooting depth is more than 60 inches. The available water capacity is low. The organic matter content is low in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate. If the soil surface is bare, the soil blowing hazard is high.

This Declo soil is very deep and well drained. It formed in mixed alluvium and windblown material on terraces. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer of this Declo soil is grayish brown moderately calcareous fine sandy loam about 11 inches thick. The underlying material is strongly calcareous white loam to a depth of more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is slow and medium from bare soil. The erosion hazard is slight and moderate. If the soil surface is bare, the soil blowing hazard is high in spring.

The Vining soil is moderately deep and well drained. It formed in windblown material of mixed origin on basalt plains. The average annual precipitation is about 10 inches, including about 2 feet of snowfall. The average annual soil temperature is about 49 degrees F.

Typically, the surface layer of this Vining soil is brown fine sandy loam about 5 inches thick. The subsoil is brown fine sandy loam about 8 inches thick. The substratum is light brownish gray fine sandy loam to basalt bedrock at a depth of 25 inches.

Permeability is moderately rapid. The effective rooting depth is 20 to 40 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. The soil blowing hazard is high if the soil is left bare.

This association is used almost entirely for livestock grazing and wildlife habitat. Proper grazing management is essential to maintain or improve the plant cover.

The native vegetation is mainly needleandthread, Indian ricegrass, and big sagebrush. The native vegetation on the Declo soil is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush.

Management of the vegetation on the Quincy soil should be designed to maintain as much plant cover as possible to stabilize this soil and reduce soil blowing.

Management of the vegetation on the Declo soil should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass and Thurber needlegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

Management of the vegetation on the Vining soil should be designed to maintain or increase the production of more palatable forage plants, such as Indian ricegrass and bluebunch wheatgrass. Brush management with proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The native plants on the Quincy, Declo, and Vining soils provide food and cover for mule deer, antelope, sage grouse, and jackrabbit.

Quincy soil in capability subclass VIIe nonirrigated, Declo soil in capability subclass VIe nonirrigated, and Vining soil in capability subclass VIe nonirrigated.

78—Rexburg silt loam, 4 to 12 percent slopes. This very deep, well drained soil formed in thick loess on hills and ridges at elevations of 5,000 to 6,200 feet. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Newdale silt loam, Lanoak silt loam, Hondoho gravelly loam, Hondoho cobbly loam, Wheelerville silt loam, and small areas of a soil containing volcanic ash or tuff, generally below a depth of 40 inches.

Typically, the surface layer of this Rexburg soil is grayish brown silt loam about 12 inches thick. The subsoil is light brownish gray silt loam about 11 inches thick. The substratum is strongly calcareous light brownish gray and very pale brown silt loam to a depth of about 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

This unit is used mainly for dryfarming. A few areas are range and wildlife habitat.

The dryfarmed areas are used mainly for small grain. A suitable rotation that is being used successfully is alternate years of winter wheat and spring barley. Using this annual cropping system along with minimum tillage helps to reduce erosion.

In addition to minimum tillage, stubble mulch tillage and contour or cross-slope farming are suitable practices that help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Terraces and diversion systems may also help to control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, Idaho fescue, big sagebrush, and antelope bitterbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Whitmar bluebunch wheatgrass, Topar pubescent wheatgrass, Luna pubescent wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The range produces native plants that provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass IIIe nonirrigated.

79—Rexburg silt loam, 12 to 20 percent slopes. This very deep, well drained soil formed in thick loess on hills and ridges at elevations of 5,000 to 6,200 feet. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Newdale silt loam; Lanoak silt loam, Hondoho gravelly loam, Hondoho cobbly loam, Wheelerville silt loam, and small areas of a soil containing volcanic ash or tuff, generally below a depth of 40 inches.

Typically, the surface layer of this Rexburg soil is grayish brown silt loam about 12 inches thick. The subsoil is light brownish gray silt loam about 11 inches thick. The substratum is strongly calcareous light brownish gray and very pale brown silt loam to a depth of about 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

This unit is used mainly for dryfarming. A few areas are range and wildlife habitat.

The dryfarmed areas are used mainly for small grain. A suitable rotation that is being used successfully is alternate years of winter wheat and spring barley. Using this annual cropping system along with minimum tillage helps to reduce erosion.

In addition to minimum tillage, stubble mulch tillage, and contour or cross-slope farming help control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Idaho

fescue, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Whitmar bluebunch wheatgrass, Topar pubescent wheatgrass, Luna pubescent wheatgrass, and Sherman big bluegrass are suitable for seedings.

The areas that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass IIIe nonirrigated.

80—Rexburg silt loam, 20 to 30 percent slopes. This very deep, well drained soil formed in thick loess on hills and ridges at elevations of 5,000 to 6,200 feet. The average annual precipitation is about 14 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between about 75 and 100 days.

Up to about 10 percent of this map unit is included small areas of Newdale silt loam, Lanoak silt loam, Hondoho gravelly loam, Hondoho cobbly loam, and Wheelerville silt loam and small areas of a soil containing volcanic ash or tuff, generally below a depth of 40 inches.

Typically, the surface layer of this Rexburg soil is grayish brown silt loam about 12 inches thick. The subsoil is light brownish gray silt loam about 11 inches thick. The substratum is strongly calcareous light brownish gray and very pale brown silt loam to a depth of about 45 inches and moderately calcareous light gray silt loam to more than 60 inches.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

This unit is used mainly for dryfarming. A few areas are range and wildlife habitat.

The dryfarmed areas are used mainly for small grain. A suitable rotation that is being used successfully is alternate years of winter wheat and spring barley. Using this annual cropping system along with minimum tillage helps to reduce erosion.

In addition to minimum tillage, stubble mulch tillage and contour or cross-slope farming help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Keeping grass on this soil about half the time also helps to control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, Idaho fescue, big sagebrush, and antelope bitterbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Whitmar bluebunch wheatgrass, Topar pubescent wheatgrass, Luna pubescent wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass IVe nonirrigated.

81—Ricrest-Ridgecrest complex, very steep. These steep to very steep soils are on mountain ridges and foot slopes at elevations of about 5,000 to 6,500 feet. The slopes are dominantly 20 to 60 percent and 50 to 300 feet long.

This map unit is about 45 percent Ricrest soil, 35 percent Ridgecrest soil, and 20 percent included small areas of Hymas extremely stony loam; Pavohroo stony loam; Moohoo gravelly loam; Dranyon loam; a moderately deep soil over quartzite or sandstone; a shallow soil less than 20 inches deep over quartzite or sandstone; and Rock outcrop.

The Ricrest soil is very deep and well drained. It formed in colluvium and material weathered from limestone that has had additions of loess. This soil is generally on ridges and foot slopes. It occurs on any aspect at the lower elevations. At the higher elevations, it is on south and west aspects and on ridgetops. The average annual precipitation is about 18 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Ricrest soil is very dark grayish brown loam about 10 inches thick. The subsoil is dark gray clay loam about 14 inches thick. The substratum is strongly calcareous light brownish gray and light gray gravelly loam to a depth of more than 60 inches.

The Ricrest soil has moderate permeability. The effective rooting depth is more than 60 inches. The available water capacity is high. The surface runoff is rapid from bare soil. The erosion hazard is very high.

The Ridgecrest soil is moderately deep and well drained. It formed principally in material weathered from limestone that has had additions of loess and colluvium in the upper part. This soil is generally on north or east aspects at the lower elevations. At the higher elevations,

it is on south and west aspects and ridgetops. The average annual precipitation is about 15 inches, including about 5 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Ridgecrest soil is brown stony loam about 9 inches thick. The underlying material is strongly calcareous brown extremely stony loam to limestone bedrock at a depth of about 29 inches.

The Ridgecrest soil has moderate permeability. The effective rooting depth is 20 to 40 inches. The available water capacity is low. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The native vegetation on the Ricrest and Ridgecrest soils is mainly bluebunch wheatgrass, mountain brome, Idaho fescue, western snowberry, and Saskatoon serviceberry. The Ricrest soil may also have some aspen.

This unit is used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to increase the production of bluebunch wheatgrass, mountain brome, and Idaho fescue and to control erosion as much as possible. Controlling brush chemically or by burning is not suggested because killing the brush may cause a serious erosion hazard. Mechanical brush control and seeding are not practical because of the steep slopes and the erosion hazard.

The native plants on this unit provide food and cover for mule deer, sage grouse, California quail, mountain quail, and ruffed grouse.

Capability subclass VIIe nonirrigated.

82—Rock outcrop. This miscellaneous area consists mainly of bare rock. In the basalt plain region in the northwest part of the county, the Rock outcrop is almost entirely basalt. In the Deep Creek and Bannock mountain ranges in the southern part of the survey area it is limestone, dolomite, quartzite, and some small areas of sandstone, shale, and tuff.

The vegetation is mostly moss and lichens. In places there may be a few inches of soil that support a few small annual plants. Where there is some soil material in cracks and crevices of the basalt, there may be small amounts of perennial grasses, big sagebrush, and antelope bitterbrush. These areas are generally inaccessible to livestock and are used principally as wildlife habitat and watershed and for esthetic purposes.

Capability subclass VIIIs nonirrigated.

83—Rock outcrop-Tenno complex, rolling. This map unit is on basalt plains at elevations of about 4,600 to 5,000 feet. Slopes range from about 0 to 20 percent and are generally about 20 to 100 feet long.

This map unit is about 60 percent Rock outcrop, 25 percent Tenno soil, and 15 percent included small areas of McCarey loam, a shallow soil that is similar to the McCarey soils but has varying amounts of stones, and a deep soil that is similar to the Tenno soil.

Rock outcrop consists mainly of bare basalt. Cracks, crevices, and pressure ridges are common. There is little, if any, vegetation. The areas of Rock outcrop are inaccessible to livestock. They are mainly wildlife habitat and watershed.

The Tenno soil is shallow and well drained. It formed in basalt plains in a thin mantle of loess and the underlying material weathered from basalt. The average annual precipitation is about 10 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Tenno soil is pale brown very stony loam about 8 inches thick. The subsoil is brown loam about 6 inches thick. The substratum is moderately calcareous light brownish gray stony loam to basalt bedrock at a depth of 17 inches.

Permeability is moderate. The effective rooting depth is 10 to 20 inches. The available water capacity is very low. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate.

The native vegetation on the Tenno soil is mainly bluebunch wheatgrass and western wheatgrass.

This soil is used almost entirely for livestock grazing, wildlife habitat, and watershed. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation on the Tenno soil should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Nevada bluegrass, Thurber needlegrass, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Chemical and mechanical brush management and seeding are impractical because of the Rock outcrop and the stony surface layer of the Tenno soil.

The native plants on the Tenno soil provide food and cover for mule deer, antelope, sage grouse, and jackrabbit.

Capability subclass VIIs nonirrigated.

84—Rock outcrop-Tenno complex, very steep. This map unit is on basalt plains at elevations of about 4,600 to 5,000 feet. It generally occurs on the slopes of, in, and near volcanic craters. Slopes generally range from about 20 to 60 percent and are 20 to 100 feet long.

This map unit is about 60 percent Rock outcrop, 30 percent Tenno soil, and 10 percent included small areas of McCarey loam, a shallow soil similar to the McCarey soil that has varying amounts of stones, a deep soil similar to the Tenno soil, and a very deep soil formed in cinders.

Rock outcrop consists mainly of bare basalt. Cracks, crevices, and pressure ridges are common. There is little, if any, vegetation. The areas of Rock outcrop are

inaccessible to livestock. They are mainly wildlife habitat and watershed.

The Tenno soil is shallow and well drained. It formed in a thin mantle of loess and the underlying material weathered from basalt on basalt plains. The average annual precipitation is about 10 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Tenno soil is pale brown very stony loam about 8 inches thick. The substratum is moderately calcareous light brownish gray stony loam to basalt bedrock at a depth of 17 inches.

Permeability is moderate. The effective rooting depth is less than 20 inches. The available water capacity is very low. The organic matter content is moderate in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The native vegetation on the Tenno soil is mainly bluebunch wheatgrass, Nevada bluegrass, Thurber needlegrass, low sagebrush, and antelope bitterbrush.

This soil is used almost entirely for livestock grazing, wildlife habitat, and watershed. Proper grazing management is needed to maintain or improve the plant cover.

Management of the vegetation on the Tenno soil should be designed to maintain or increase desirable forage plants, such as bluebunch wheatgrass, Nevada bluegrass, Thurber needlegrass, and antelope bitterbrush. Brush management by proper grazing practices may be needed in reestablishing forage production to its potential. Chemical and mechanical brush management and seeding are not practical because of the predominance of Rock outcrop and the stony surface layer of the Tenno soil.

The native plants on the Tenno soil provide food and cover for mule deer, antelope, sage grouse, and jackrabbit.

Capability subclass VIIs nonirrigated.

85—Rock outcrop-Trevino-Portino complex, rolling. This map unit is on basalt plains at elevations of about 4,200 to 4,700 feet. The slopes range from 0 to 20 percent and are generally about 20 to 100 feet long.

This map unit is about 50 percent Rock outcrop, 25 percent Trevino soil, and 15 percent Portino soil. The remaining 10 percent is included small areas of Portneuf silt loam, bedrock substratum; a shallow soil that is similar to the Trevino soil but has less profile development; and a soil that is similar to the Portneuf soil but has more profile development.

Rock outcrop consists mainly of bare basalt. Cracks, crevices, and pressure ridges are common. There is little, if any, vegetation. The areas of Rock outcrop are inaccessible to livestock. They are mainly wildlife habitat.

The Trevino soil is shallow and well drained. It formed in a thin mantle of loess on basalt plains. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer and the subsoil of this Trevino soil are light brownish gray stony loam about 12 inches thick. The substratum is moderately calcareous light gray stony loam to basalt bedrock at a depth of about 19 inches.

The Trevino soil has moderate permeability. The effective rooting depth is 8 to 20 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate.

The Portino soil is moderately deep and well drained. It formed in a loess mantle on basalt plains. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer of this Portino soil is light brownish gray stony loam about 12 inches thick. The underlying material is strongly calcareous white silt loam to a depth of about 24 inches and strongly calcareous light gray silt loam to basalt bedrock at about 34 inches.

The Portino soil has moderate permeability. The effective rooting depth is 20 to 40 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate.

The native vegetation on the Trevino soil is mainly bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, and low sagebrush. The native vegetation on the Portino soil is mainly bluebunch wheatgrass, Thurber needlegrass, western wheatgrass, big sagebrush, and tall green rabbitbrush.

These soils are used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation on the Trevino and Portino soils should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass. Brush management by proper grazing practices may be needed in reestablishing forage production to its potential. Chemical and mechanical brush management and seeding are impractical because of the Rock outcrop and the stony surface layer of the Trevino and Portino soils.

The native plants on the Trevino and Portino soils provide food and cover for mule deer, antelope, sage grouse, and jackrabbit.

Capability subclass VIIs nonirrigated.

86—Rock outcrop and Torriorthents. This map unit consists of basalt Rock outcrop interspersed with deposits of windblown material of extremely variable depth and texture. The unit generally occurs on cut banks of old channels in basalt flows. Slopes range from 20 to 60 percent and in some places are vertical or nearly vertical

cliffs. The unit also includes talus at the foot of some of the cliffs and very steep slopes.

The vegetation is primarily restricted to the intermingled areas of windblown material. It is mainly big sagebrush, bluebunch wheatgrass, antelope bitterbrush, and juniper. It has little value for livestock grazing because of the limited forage produced and the limited accessibility to livestock.

This unit is used primarily as wildlife habitat and for esthetic purposes.

Capability subclass VIIIs nonirrigated.

87—Schodson fine sandy loam, 0 to 3 percent slopes. This very deep, somewhat poorly drained soil formed in sandy alluvial and windblown material in old river channels. Elevations range from about 4,200 to 4,400 feet. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between l25 and 140 days.

Included in mapping are small areas of Escalante fine sandy loam, Kecko fine sandy loam, Quincy loamy fine sand, Clems fine sandy loam, soils similar to the Schodson soil that are poorly drained or very poorly drained, and a few areas where the water table is above the soil surface in spring and summer.

Typically, the surface layer of this Schodson soil is brown fine sandy loam about 6 inches thick. The underlying material is slightly calcareous yellowish brown and brown fine sandy loam to a depth of 28 inches and mottled, pale brown fine sandy loam and loamy fine sand to more than 60 inches.

Permeability is moderately rapid in the upper part of the profile and rapid in the lower part. The effective rooting depth is more than 60 inches. The water table fluctuates below 28 inches late in spring and early in summer. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Some areas have been artificially drained. The nonirrigated areas are used for livestock grazing and wildlife habitat.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation. Unless the area is artificially drained, alfalfa generally cannot be raised successfully.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to application of nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable practices that help to maintain or improve the soil structure.

The native vegetation is mainly tufted hairgrass, bluegrass, wheatgrass, sedge, and clover. Proper grazing management is needed to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as wheatgrass, bluegrass, and clover. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically may be beneficial. Seeding may be practical if the range is deteriorated. Creeping meadow foxtail, reed canarygrass, and clover are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse. The poorly drained areas and the areas of standing water provide good habitat for wetland wildlife.

Capability subclass IIIw irrigated, VIw nonirrigated.

88—Sheege-Pavohroo association, very steep. These well drained soils are on mountain ridges and foot slopes at elevations of about 6,500 to 9,000 feet. Slopes range from 20 to 60 percent but are dominantly more than 30 percent. They are about 50 to 300 feet long.

This association is about 60 percent Sheege soil and 25 percent Pavohroo soil.

The remaining 15 percent of the map unit is included areas of Hymas extremely stony loam, Moohoo loam, Ricrest loam, Ridgecrest stony loam, and Rock outcrop.

The Sheege soil is shallow and well drained. It formed in colluvium and material weathered from limestone that has had additions of loess in the upper part. This soil is on the upper part of mountain ridges on all aspects. Elevation ranges to about 9,000 feet on the mountain peaks. The average annual precipitation is about 20 inches, including about 7 feet of snowfall. The average annual soil temperature is about 40 degrees F.

Typically, the surface layer of this Sheege soil is grayish brown extremely stony loam about 6 inches thick. The underlying material is pale brown very stony loam to limestone bedrock at a depth of about 17 inches.

The Sheege soil has moderate permeability. The effective rooting depth is 10 to 20 inches. The available water capacity is very low. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The Pavohroo soil is deep and well drained. It formed in colluvium and material weathered from limestone that has had additions of loess in the upper part. This soil is

generally on the lower mountain ridges and foot slopes that have north and east aspects. The average annual precipitation is about 20 inches, including about 7 feet of snowfall. The average annual soil temperature is about 40 degrees F.

Typically, the surface layer of this Pavohroo soil is dark grayish brown stony loam and loam about 14 inches thick. The subsoil is brown loam and pale brown clay loam and loam to a depth of about 38 inches. The substratum is pale brown stony loam to about 48 inches. Fractured limestone bedrock is below.

The Pavohroo soil has moderate permeability in the surface layer and the substratum and moderately slow permeability in the subsoil. The effective rooting depth is 40 to 60 inches. The available water capacity is moderate. Surface runoff is very rapid from bare soil. The erosion hazard is very high if the vegetation is disturbed.

The native vegetation on the Sheege soil is mainly bluebunch wheatgrass, Idaho fescue, slender wheatgrass, western snowberry, and big sagebrush. This soil is used mainly for livestock grazing, wildlife habitat, and watershed.

Management of the vegetation on the Sheege soil should be designed both to increase production of bluebunch wheatgrass, Idaho fescue, and slender wheatgrass and to control erosion as much as possible. Controlling brush chemically or by burning is not suggested because of the erosion hazard that may be created when the brush is killed. Mechanical brush management and seeding are impractical because of the extremely stony surface layer, the slope, and the erosion hazard.

The native vegetation on the Pavohroo soil is mainly dense stands of Douglas-fir and aspen and an understory of pine reedgrass, elk sedge, snowberry, blue wildrye, and wheatgrass.

This soil is used mainly for wildlife habitat and watershed. It is poor for livestock grazing because of the limited amount of forage produced. The chief restrictions in timber production are the slow growth rates, the erosion hazard, the inaccessibility, the small stands, and the lack of a local market.

Management of the vegetation on the Pavohroo soil should be designed to maintain or improve the quality of the watershed and wildlife habitat. It should also include prevention and control of insect and disease outbreaks in the Douglas-fir stands. There is a limited potential for timber production if a market is established.

The native plants on the Sheege and Pavohroo soils provide food and cover for mule deer, elk, mountain quail, California quail, ruffed grouse, and Franklin's grouse.

Sheege soil in capability subclass VIIs nonirrigated, Pavohroo soil in capability subclass VIIe nonirrigated.

89—Trevino-Portino-Rock outcrop complex, rolling. This map unit is on basalt plains at elevations of about 4,200 to 4,700 feet. The slopes range from 0 to 20 percent and are generally about 50 to 300 feet long.

This map unit is about 40 percent Trevino soil, 30 percent Portino soil, and 20 percent Rock outcrop (fig.l0). The remaining 10 percent is included small areas of Portneuf silt loam, bedrock substratum; a shallow soil that is similar to the Trevino soil but has less profile development; and a soil that is similar to the Portneuf soil but has more profile development.

The Trevino soil is shallow and well drained. It formed in a thin mantle of loess on basalt plains. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer and the subsoil of this Trevino soil are light brownish gray stony loam about 12 inches thick. The substratum is moderately calcareous light gray stony loam to basalt bedrock at about 19 inches.

The Trevino soil has moderate permeability. The effective rooting depth is 8 to 20 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate.

The Portino soil is moderately deep and well drained. It formed in a loess mantle on basalt plains. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer of this Portino soil is light brownish gray stony loam about 12 inches thick. The underlying material is strongly calcareous white silt loam to a depth of about 24 inches and strongly calcareous light gray silt loam to basalt bedrock at about 34 inches.

The Portino soil has moderate permeability. The effective rooting depth is 20 to 40 inches. The available water capacity is moderate. The organic matter content is moderate in the surface layer. Surface runoff is medium from bare soil. The erosion hazard is moderate.

Rock outcrop consists mainly of bare basalt. Cracks, crevices, and pressure ridges are common. There is little, if any, vegetation. The areas of Rock outcrop are inaccessible to livestock. They are mainly wildlife habitat.

The native vegetation on the Trevino soil is mainly bluebunch wheatgrass, Sandberg bluegrass, Thurber needlegrass, and low sagebrush. The native vegetation on the Portino soil is mainly bluebunch wheatgrass, western wheatgrass, Thurber needlegrass, big sagebrush, and tall green rabbitbrush.

These soils are used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is needed to maintain or improve the plant cover.

Management of the vegetation on the Trevino and Portino soils should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass. Brush management and proper grazing

practices may be needed in reestablishing forage production to its potential. Controlling brush chemically may be beneficial in selected areas. Mechanical brush management and seeding are impractical because of the stony surface layer of the Trevino and Portino soils.

The native plants provide food and cover for mule deer, antelope, sage grouse, and jackrabbit.

Capability subclass VIIs nonirrigated.

90—Vining-Quincy-Rock outcrop complex, undulating. These soils formed in sandy windblown material on basalt plains at elevations of about 4,200 to 4,400 feet. The slopes of the Vining soil range from 0 to 8 percent; those of the Quincy soil range from 4 to 12 percent.

This map unit is about 50 percent Vining soil, 15 percent Quincy soil, 15 percent Rock outcrop, and 20 percent included small areas of Kecko fine sandy loam, Clems fine sandy loam, Portneuf fine sandy loam, Feltham loamy sand, Wapi loamy fine sand, Portino stony loam, and Trevino stony loam.

The Vining soil is moderately deep and well drained. It formed in windblown material of mixed origin on basalt plains. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer of this Vining soil is brown fine sandy loam about 5 inches thick. The subsoil is brown fine sandy loam about 8 inches thick. The substratum is light brownish gray fine sandy loam to basalt bedrock at about 25 inches.

Permeability is moderately rapid. The effective rooting depth is 20 to 40 inches. The available water capacity is low. The organic matter content is moderate in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. The soil blowing hazard may be high if the surface is bare.

This Quincy soil is very deep and somewhat excessively drained. It formed in thick sandy windblown material of mixed origin on dissected basalt plains and terraces. The average annual precipitation is about 9 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Typically, the profile of this Quincy soil is brown and grayish brown loamy fine sand to a depth of more than 60 inches.

Permeability is rapid. The effective rooting depth is more than 60 inches. The available water capacity is low. The organic matter content is low in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight. The soil blowing hazard is very high if the soil surface is bare.

Rock outcrop consists mainly of bare basalt. Cracks, crevices, and pressure ridges are common. There is little, if any, vegetation. The areas of Rock outcrop are inaccessible to livestock. They are mainly wildlife habitat.

The native vegetation on the Vining soil is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush. The native vegetation on the Quincy soil is dominated by Indian ricegrass, needleandthread, and big sagebrush.

This unit is used almost entirely for livestock grazing and wildlife habitat. Proper grazing practices are essential to maintain or improve the plant cover.

Management of the vegetation on these soils should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, needleandthread, and Indian ricegrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically and mechanically may be practical in selected areas. Seeding also may be practical in selected areas. Nordan crested wheatgrass and Siberian wheatgrass are suitable for seeding.

The native plants on the Vining and Quincy soils provide food and cover for mule deer, antelope, sage grouse, and jackrabbit.

Capability subclass VIIe nonirrigated.

91—Vining-Wapi-Rock outcrop complex, undulating. This map unit is on basalt plains at elevations of about 4,200 to 4,400 feet. The slopes are 0 to 12 percent and about 50 to 200 feet long.

This map unit is about 40 percent Vining soil, 20 percent Wapi soil, 20 percent Rock outcrop, and 20 percent included small areas of Kecko fine sandy loam, Clems fine sandy loam, Quincy loamy fine sand, and Portneuf fine sandy loam.

The Vining soil is moderately deep and well drained. It formed in windblown material of mixed origin on basalt plains. The average annual precipitation is about 8 inches. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer of this Vining soil is brown fine sandy loam about 5 inches thick. The subsoil is brown fine sandy loam about 8 inches thick. The substratum is light brownish gray fine sandy loam to bedrock at a depth of 25 inches.

Permeability is moderately rapid. The effective rooting depth is to bedrock, which occurs at 20 to 40 inches. The available water capacity is low. The organic matter content is low in the surface layer. Surface runoff is slow. The erosion hazard is slight if the soil is under natural vegetation. The soil is very susceptible to soil blowing if the vegetation is removed.

The Wapi soil is shallow and excessively drained. It formed in windblown material of mixed origin on basalt plains. The average annual precipitation is about 8 inches. The average annual soil temperature is about 50 degrees F.

Typically, the surface layer of this Wapi soil is brown loamy fine sand about 5 inches thick. The underlying material is brown loamy fine sand extending to bedrock at a depth of 19 inches.

Permeability is rapid. The effective rooting depth is to bedrock, which is at 10 to 20 inches. The available water capacity is low. The organic matter content is low in the surface layer. Surface runoff is slow. The erosion hazard is slight. The soil blowing hazard is high if the vegetation is removed.

Rock outcrop consists mainly of bare basalt. Cracks, crevices, and pressure ridges are common. There is little, if any, vegetation. The areas of Rock outcrop are inaccessible to livestock. They are mainly wildlife habitat.

The native vegetation is mainly Thurber needlegrass, bluebunch wheatgrass, and big sagebrush.

This unit is not suited to crops. It is used mainly for livestock grazing and wildlife habitat. Proper grazing practices are essential to maintain or improve the plant cover.

Management of the vegetation on these soils should be designed to maintain or increase the production of more desirable forage plants, such as Thurber needlegrass, Indian ricegrass, and bluebunch wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush by burning is not suggested because of the soil blowing hazard that may be created when the brush is removed. Controlling brush chemically and mechanically may be practical in selected areas. Seeding also may be practical in selected areas. Nordan crested wheatgrass and Siberian wheatgrass are suitable for seeding.

The native plants provide food and cover for mule deer, jackrabbit, sage grouse, and antelope.

Capability subclass VIIs nonirrigated.

92—Wahtigup-Hondoho complex, steep. These well drained soils are on colluvial mountain foot slopes and alluvial fans at elevations of about 4,800 feet to 6,700 feet. The slopes are dominantly 10 to 30 percent and 50 to 300 feet long.

This map unit is about 45 percent Wahtigup soil, 35 percent Hondoho soil, and 20 percent included areas of Hymas extremely stony loam, Ridgecrest stony loam, Lanoak silt loam, Rexburg silt loam, a deep stony soil associated with quartzite, a shallow soil less than 20 inches deep over quartzite, and Rock outcrop. In the Rattlesnake Creek area, there are some volcanic ash deposits. The ash is generally more than 40 inches deep and is commonly overlain by quartzite gravel and cobbles.

The Wahtigup soil is very deep and well drained. It formed in colluvium and local alluvium from limestone that has had additions of loess in the upper part. The average annual precipitation is about 13 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Wahtigup soil is moderately calcareous grayish brown gravelly loam about 12 inches thick. The underlying material is strongly calcareous light brownish gray and light gray gravelly loam and stony loam to a depth of more than 60 inches.

The Wahtigup soil has moderate permeability. The effective rooting depth is more than 60 inches. The available water capacity is moderate. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The Hondoho soil is very deep and well drained. It formed in a mixture of loess and alluvium and colluvium from quartzite or sandstone. The average annual precipitation is about 14 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees.

Typically, the surface layer of this Hondoho soil is dark grayish brown and grayish brown cobbly loam about 12 inches thick. The subsoil is moderately calcareous pale brown cobbly loam about 4 inches thick. The substratum is strongly calcareous pale brown and pale yellow very cobbly loam and very cobbly sandy clay loam to a depth of more than 60 inches.

The Hondoho soil has moderate permeability. The effective rooting depth is more than 60 inches. The available water capacity is moderate. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The native vegetation on the Wahtigup and Hondoho soils is mainly bluebunch wheatgrass, slender wheatgrass, Nevada bluegrass, big sagebrush, and antelope bitterbrush.

This unit is used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is needed to maintain or improve the plant cover.

Management of the vegetation should be designed to increase the production of bluebunch wheatgrass, slender wheatgrass, and antelope bitterbrush. Brush management by proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Whitmar bluebunch wheatgrass, and Sherman big bluegrass are suitable for seeding.

The native plants on this unit provide food and cover for mule deer, cottontail, sage grouse, California quail, and mountain quail.

Capability subclass VIs nonirrigated.

93—Wahtigup-Hondoho complex, very steep. These well drained soils are on colluvial mountain foot slopes and alluvial fans at elevations of about 4,600 to 6,700 feet. The slopes are dominantly 30 to 60 percent and 50 to 300 feet long.

This map unit is about 40 percent Wahtigup soil, 35 percent Hondoho soil, and 25 percent included areas of Hymas extremely stony loam, Ridgecrest stony loam, Ricrest loam, a deep stony soil associated with quartzite, a shallow soil less than 20 inches deep over quartzite, and Rock outcrop. In the Rattlesnake Creek area, there are some volcanic ash deposits. The ash is generally

more than 40 inches deep and is commonly overlain by quartzite gravel and cobbles.

The Wahtigup soil is very deep and well drained. It formed in colluvium and local alluvium from limestone that has had additions of loess in the upper part. The average annual precipitation is about 13 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Wahtigup soil is moderately calcareous grayish brown gravelly loam about 12 inches thick. The underlying material is strongly calcareous light brownish gray and light gray gravelly loam and stony loam to a depth of more than 60 inches.

The Wahtigup soil has moderate permeability. The effective rooting depth is more than 60 inches. The available water capacity is moderate. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The Hondoho soil is very deep and well drained. It formed in a mixture of loess and alluvium and colluvium from quartzite or sandstone. The average annual precipitation is about 13 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Typically, the surface layer of this Hondoho soil is dark grayish brown and grayish brown very cobbly loam about 12 inches thick. The subsoil is moderately calcareous pale brown cobbly loam about 4 inches thick. The substratum is strongly calcareous pale brown and pale yellow very cobbly loam and very cobbly sandy clay loam to a depth of more than 60 inches.

The Hondoho soil has moderate permeability. The effective rooting depth is more than 60 inches. The available water capacity is moderate. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

The native vegetation on this unit is mainly bluebunch wheatgrass, slender wheatgrass, prairie junegrass, big sagebrush, and antelope bitterbrush.

This unit is used mainly for livestock grazing, wildlife habitat, and watershed. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to increase the production of bluebunch wheatgrass, slender wheatgrass, and antelope bitterbrush and to control erosion as much as possible. Controlling brush chemically or by burning is not suggested because of the erosion hazard that may be created when the brush is killed. Mechanical brush management and seeding are impractical because of the gravelly and very cobbly surface layer of the soils, the slope, and the erosion hazard.

The native plants on this unit provide food and cover for mule deer, cottontail, sage grouse, California quail, and mountain quail.

Capability subclass VIIe nonirrigated.

94—Wheeler silt loam, 4 to 12 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces, generally with southerly or westerly exposures, at elevations of 4,300 to 5,500 feet. The average annual precipitation is abut 11 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam, Portneuf silt loam, and Neeley silt loam.

Typically the surface layer of this Wheeler soil is strongly calcareous very pale brown and light gray silt loam about 8 inches thick. The underlying material is very strongly calcareous light gray silt loam to a depth of 29 inches and very strongly calcareous white silt loam to 72 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used for irrigated hay, pasture, potatoes, sugar beets, and small grain. Nonirrigated areas are used for range and marginal dryfarming.

An example of a suitable crop rotation in irrigated areas is 2 years of alfalfa for hay or grasses and legumes for pasture, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, 1 year of potatoes or sugar beets, 1 year of barley or wheat for grain, and then hay or pasture seeded with the grain or in the grain stubble. Some farmers are successfully using an alternate year small grain-potato or sugar beet rotation.

Sprinkler irrigation is well suited to most crops. Proper irrigation water management is needed to reduce leaching and the risk of erosion.

The dryfarmed areas are used mainly for small grain. Yields are marginal, but the soil areas are intermingled and farmed with soils that are profitably dryfarmed.

In irrigated areas, commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming help to control erosion. Fall chiseling on the contour or across the slope helps to catch and reduce winter moisture runoff. Terraces and diversion systems may be practical where needed to control erosion. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The native vegetation is mainly bluebunch wheatgrass, western wheatgrass, Thurber needlegrass, big sagebrush, and tall green rabbitbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Thurber

needlegrass, and western wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The areas that are farmed provide food and cover for cottontail, songbirds,and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass IVe irrigated, VIe nonirrigated.

95—Wheeler silt loam, 12 to 20 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces, generally with southerly or westerly exposures, at elevations of 4,300 to 5,500 feet. The average annual precipitation is about 11 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam, Portneuf silt loam, and Neeley silt loam.

Typically, the surface layer of this Wheeler soil is strongly calcareous very pale brown and light gray silt loam about 8 inches thick. The underlying material is very strongly calcareous light gray silt loam to a depth of 29 inches and very strongly calcareous white silt loam to 72 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is used almost entirely for dryfarming and range. The dryfarmed areas are used mainly for small grain. Yields are marginal, but the soil areas are intermingled and farmed with soils that are profitably dryfarmed. The crop rotation used is alternate years of fallow and winter wheat.

Stubble mulch tillage, minimum tillage, and contour or cross-slope tillage help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Plant residue should be left on the surface if possible. Otherwise, the soil should be rough tilled to help reduce soil blowing.

The best use of this unit is for grazing. The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, western wheatgrass, big sagebrush, and tall green rabbitbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The few areas that are farmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for jackrabbit and sage grouse.

Capability subclass VIe nonirrigated.

96—Wheeler silt loam, 20 to 30 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces, generally with southerly or westerly exposures, at elevations of 4,300 to 5,500 feet. The average annual precipitation is about 11 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F. The average frost-free season is between about 100 and 140 days.

Up to about 10 percent of this map unit is included small areas of Pocatello silt loam, Neeley silt loam, and Kucera silt loam.

Typically, the surface layer of this Wheeler soil is strongly calcareous very pale brown and light gray silt loam about 8 inches thick. The underlying material is very strongly calcareous light gray silt loam to a depth of 29 inches and very strongly calcareous white silt loam to 72 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a slight hazard in spring.

This unit is almost entirely range. The small dryfarmed areas are used mainly for small grain. Yields are marginal, but the soil areas are intermingled and farmed with soils that are profitably dryfarmed.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, western wheatgrass, big sagebrush, and tall green rabbitbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and western wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian

wheatgrass, and Whitmar bluebunch wheatgrass are suitable for seeding.

The native plants on this unit provide food and cover for jackrabbit and sage grouse.

Capability subclass VIe nonirrigated.

97—Wheeler silt loam, 30 to 60 percent slopes. This very deep, well drained soil formed in thick loess on hills and terraces, generally with southerly or westerly exposures, at elevations of 4,300 to 5,500 feet. The average annual precipitation is about 11 inches, including about 2 feet of snowfall. The average annual soil temperature is about 50 degrees F.

Up to about 10 percent of this map unit is included areas of Kucera silt loam, Pocatello silt loam, and Neeley silt loam.

Typically, the surface layer of this Wheeler soil is strongly calcareous very pale brown and light gray silt loam about 8 inches thick. The underlying material is very strongly calcareous light gray silt loam to a depth of 29 inches and very strongly calcareous white silt loam to 72 inches or more.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high. If the soil surface is bare, soil blowing may be a hazard in spring.

This unit is almost entirely range. The native vegetation is mainly bluebunch wheatgrass, prairie junegrass, Nevada bluegrass, and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as bluebunch wheatgrass. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or by burning is not generally suggested because of the erosion hazard that may be created. Mechanical brush management and seeding are also impractical because of the slopes and the erosion hazard.

The native plants on this unit provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass VIIe nonirrigated.

98—Wheelerville silt loam, 4 to 12 percent slopes. This very deep, well drained soil formed in thick loess on hills and fans at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 80 and 100 days.

Up to about 5 percent of this map unit is included small areas of Newdale silt loam, Lanoak silt loam, and Arbone loam.

Typically, the surface layer of this Wheelerville soil is moderately calcareous pale brown silt loam about 8 inches thick. The underlying material is moderately calcareous very pale brown silt loam to a depth of more than 60 inches. There are many nodules in the upper part of the underlying material.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

Nearly all of this unit is dryfarmed. It is used mainly for small grain. A suitable rotation is 1 year of winter wheat, 1 year of spring small grain, and 1 year of fallow. Some farmers are successfully using an annual cropping system in which winter wheat and spring barley are planted in alternate years.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming can help to control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

This unit is well suited to cottontail, songbirds, and such upland gamebirds as ring-necked pheasant, mourning dove, and Hungarian partridge. This wildlife obtains food and shelter chiefly from cropland. Food must be close to shelter that provides protection from predators and inclement weather.

Capability subclass IVe nonirrigated.

99—Wheelerville silt loam, 12 to 20 percent slopes. This very deep, well drained soil formed in thick loess on hills and fans at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 80 and 100 days.

Up to about 5 percent of this map unit is included small areas of Newdale silt loam, Lanoak silt loam, and Arbone loam.

Typically, the surface layer of this Wheelerville soil is moderately calcareous pale brown silt loam about 8 inches thick. The underlying material is moderately calcareous very pale brown silt loam to a depth of more than 60 inches. There are many nodules in the upper part of the underlying material.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is rapid from bare soil. The erosion hazard is high.

Nearly all of this unit is dryfarmed. It is used mainly for small grain. Some farmers are successfully using an

annual cropping system in which winter wheat and spring barley are planted in alternate years.

Stubble mulch tillage, minimum tillage, and contour or cross-slope farming help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff.

Commercial fertilizer is generally needed in addition to plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

This unit is well suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. This wildlife obtains food and shelter primarily from cropland. Food must be close to shelter that provides protection from predators and inclement weather.

Capability subclass IVe nonirrigated.

100—Wheelerville silt loam, 20 to 30 percent slopes. This very deep, well drained soil formed in thick loess on hills and fans at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 80 and 100 days.

Up to about 5 percent of this map unit is included small areas of Newdale silt loam, Lanoak silt loam, and Arbone loam.

Typically, the surface layer of this Wheelerville soil is moderately calcareous pale brown silt loam about 8 inches thick. The underlying material is moderately calcareous very pale brown silt loam to a depth of more than 60 inches. There are many nodules in the upper part of the underlying material.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

This unit is used mainly for nonirrigated small grain. A few areas are range. Some farmers are successfully using an annual cropping system in which winter wheat and spring barley are planted in alternate years. Using this annual cropping system along with minimum tillage helps to reduce erosion.

In addition to minimum tillage, stubble mulch tillage, and contour or cross-slope farming are suitable practices that help to control erosion. Fall chiseling across the slope helps to catch and reduce winter moisture runoff. Keeping grass on this soil about half the time also helps to control erosion.

Commercial fertilizer is generally needed in addition to plant residue. Generally all crops respond to nitrogen and phosphorus fertilizers.

The native vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, big sagebrush, and antelope bitterbrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass, Thurber needlegrass, and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or mechanically or by burning may be beneficial. Seeding may be practical if the range is deteriorated. Nordan crested wheatgrass, Siberian wheatgrass, and Sherman big bluegrass are suitable for seeding.

The areas that are dryfarmed provide food and cover for cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, and Hungarian partridge. The native plants on the range areas provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass IVe nonirrigated.

101—Wheelerville silt loam, 30 to 60 percent slopes. This very deep, well drained soil formed in thick loess on hills and fans at elevations of 5,000 to 6,500 feet. The average annual precipitation is about 12 inches, including about 3 feet of snowfall. The average annual soil temperature is about 45 degrees F.

Up to about 5 percent of this map unit is included small areas of Newdale silt loam, Lanoak silt loam, and Arbone loam.

Typically, the surface layer of this Wheelerville soil is moderately calcareous pale brown silt loam about 8 inches thick. The underlying material is moderately calcareous very pale brown silt loam to a depth of more than 60 inches. There are many nodules in the upper part of the underlying material.

Permeability is moderate. The effective rooting depth is more than 60 inches. The available water capacity is high. The organic matter content is low in the surface layer. Surface runoff is very rapid from bare soil. The erosion hazard is very high.

This unit is almost entirely range. The predominant vegetation is bluebunch wheatgrass and big sagebrush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more desirable forage plants, such as bluebunch wheatgrass and antelope bitterbrush. Brush management and proper grazing practices may be needed in reestablishing forage production to its potential. Controlling brush chemically or by burning is not generally suggested because of the erosion hazard that may be created. Mechanical brush management and seeding also are generally impractical because of the slopes and the erosion hazard.

The native plants on this unit provide food and cover for mule deer, sage grouse, jackrabbit, California quail, and mountain quail.

Capability subclass VIIe nonirrigated.

102—Xerollic Calciorthids, steep. This map unit consists of banks or escarpments. It commonly occurs as cut banks along the Snake River and American Falls Reservoir. Slopes range from about 20 percent to more than 60 percent. The soil is extremely variable in depth and texture. The vegetation is very sparse. Surface runoff is very rapid. The erosion hazard is very high.

This unit is not suitable for cultivation or grazing. It provides some wildlife habitat.

Capability subclass VIIIe nonirrigated.

103—Zunhall silt loam, 0 to 3 percent slopes. This very deep, somewhat poorly drained soil formed in alluvium of mixed origin on bottom land and low alluvial fans. Elevations range from about 4,700 to 6,200 feet. The average annual precipitation is about 14 inches, including about 4 feet of snowfall. The average annual soil temperature is about 45 degrees F. The average frost-free season is between 85 and 100 days.

Up to about 10 percent of this map unit is included small areas of Arbone Variant silt loam, Arbone loam, Rexburg silt loam, poorly drained and very poorly drained soils, and some very small areas of saline-alkali soils.

Typically, the surface layer of this Zunhall soil is moderately calcareous gray and light brownish gray silt loam about 15 inches thick. The underlying material is strongly and moderately calcareous mottled white silt loam to a depth of more than 60 inches.

Permeability is moderate in the surface layer and moderately slow in the underlying material. The effective rooting depth is more than 60 inches. The water table fluctuates below a depth of 20 inches in spring. The available water capacity is high. The organic matter content is high in the surface layer. Surface runoff is slow from bare soil. The erosion hazard is slight.

Small areas are used for dryfarming and livestock grazing. The dryfarmed areas are used mainly for small grain.

A suitable crop rotation is 1 year of winter wheat, 1 year of spring grain, and 1 year of fallow. Some farmers are successfully using an annual cropping system in which winter wheat and spring barley are planted in alternate years.

Commercial fertilizer is generally needed in addition to manure and plant residue. Generally, all crops respond to nitrogen and phosphorus fertilizers.

Stubble mulch tillage and minimum tillage are suitable practices that help to maintain or improve the soil structure and to reduce compaction.

The native vegetation is mainly sedge, tufted hairgrass, wheatgrass, bluegrass, and rush. Proper grazing management is essential to maintain or improve the plant cover.

Management of the vegetation should be designed to maintain or increase the production of more palatable forage plants, such as wheatgrass and bluegrass. If the range is deteriorated, seeding may be practical in selected areas. Alkar tall wheatgrass amd Greenar intermediate wheatgrass are suitable for seeding.

This unit is suited to cottontail, songbirds, and such upland game birds as ring-necked pheasant, mourning dove, Hungarian partridge, and California quail.

Capability subclass IVw nonirrigated.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic tank disposal systems, and other factors affecting the productivity, potential, and limitations of the soils under various uses and management. In this way, field experience and measured data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section is useful in planning use and management of soils for crops and pasture, rangeland, and woodland, as sites for buildings, highways and other transportation systems, sanitary facilities, and parks and other recreation facilities, and for wildlife habitat. From the data presented, the potential of each soil for specified land uses can be determined, soil limitations to these land uses can be identified, and costly failures in houses and other structures, caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable can be selected, or practices that will overcome the soil limitations can be planned.

Planners and others using the soil survey can evaluate the impact of specific land uses on the overall productivity of the survey area or other broad planning area and on the environment. Productivity and the environment are closely related to the nature of the soil. Plans should maintain or create a land-use pattern in harmony with the natural soil.

Contractors can find information that is useful in locating sources of sand and gravel, roadfill, and topsoil. Other information indicates the presence of bedrock, wetness, or very firm soil horizons that cause difficulty in excavation.

Health officials, highway officials, engineers, and many other specialists also can find useful information in this soil survey. The safe disposal of wastes, for example, is closely related to properties of the soil. Pavements, sidewalks, campsites, playgrounds, lawns, and trees and shrubs are influenced by the nature of the soil.

Crops and pasture

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited to the soil are discussed; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are presented for each soil.

This section provides information about the overall agricultural potential of the survey area and about the management practices that are needed. The information is useful to equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Soil maps for detailed planning." Planners of management systems for individual fields or farms should also consider the detailed information given in the description of each soil.

Most of the survey area is used for crops and pasture. Farming, both dryland and irrigated, is a dominant part of the economy. The acreage in dryland crops is being reduced as more and more land is irrigated. The most important dryland cash crops are wheat and barley. The most important irrigated cash crops are sugar beets, potatoes, wheat, and barley.

Livestock, mainly beef cattle, has always been a major part of the economy. The rangeland acreage is also slowly being reduced as it is converted to irrigated cropland.

The potential is good for increased food production. A significant acreage has good potential as irrigated cropland if water becomes available. In addition to the reserve productive capacity represented by this land, food production could also be increased considerably by extending the latest crop production technology to all cropland in the survey area. This soil survey can greatly facilitate the application of such technology.

The use of the soil survey in making land use decisions that will influence the future role of farming in the survey area is discussed under "General soil map for broad land use planning" and "Broad land use considerations."

Soil erosion is the major problem on most of the land in the survey area. If the soil is irrigated, and the slope is more than 2 percent, erosion is a hazard. On dryfarmed soils, erosion is a hazard if the slope is more than 4 percent.

Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil or underlying material is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as the Arbone variant; on soils having strongly alkaline layers near the surface, such as Escalante and Pocatello; and on soils having a layer that limits the depth of the root zone. Such layers include nodular horizons, as in Portneuf soils, or bedrock, as in the Portino, Trevino, Neeley variant, and Vining soils. Second, soil erosion on farmland results in sediment entering streams. Erosion control minimizes the pollution of streams by sediment and improves the quality of water for municipal use and recreation and for fish and wildlife.

Erosion control provides a protective surface cover, reduces runoff, and increases infiltration. A cropping system that keeps a plant cover on the soil for extended periods can hold soil erosion losses to amounts that do not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, the legume and grass forage crops in the cropping system reduce erosion on sloping land. They also provide nitrogen and improve tilth for the following crops.

Minimizing tillage and leaving crop residue on the surface increase infiltration and reduce the hazards of runoff and erosion. These practices can be adapted to most soils in the survey area. Annual cropping to small grain combined with minimum tillage is effective in reducing erosion on the dryfarmed Newdale, Rexburg, Arbone, Arbone variant, and Lanoak soils. This practice cannot be used successfully on those dryfarmed soils that receive less precipitation.

Terraces and diversions which reduce the length of slope, reduce runoff and erosion. They are most practical on deep, well drained soils that have regular slopes of up to about 15 percent. Arbone, Newdale, Rexburg, Lanoak, Neeley, Pocatello, Wheeler, and Wheelerville soils with slopes of less than about 15 percent are suitable for terraces. The other soils in the survey area are less suitable for terraces and diversions because of irregular or steep slopes. Contour or cross-slope farming is an erosion control practice in the survey area. It is best suited to soils with smooth, uniform slopes, for example, some areas of Arbone, Newdale, Rexburg, Lanoak, Neeley, Pocatello, Wheeler, and Wheelerville soils.

Soil blowing is a hazard on the sandy Feltham and Quincy soils; on the sandy loam Declo, Kecko, Escalante, and Paniogue soils; and in spring on the silt loam Pocatello, Neeley, Wheeler, Portino, and Portneuf soils. Soil blowing can damage these soils in a few hours if winds are strong and the soils are dry and bare of vegetation or surface mulch. Maintaining a plant cover, surface mulch, or a rough surface through proper tillage minimizes the hazard of soil blowing.

Information on the design of erosion control measures for each kind of soil is contained in the Technical Guide, available in local offices of the Soil Conservation Service.

Soil drainage is the major management need on only a small percentage of the acreage used for crops and pasture in the survey area. This acreage consists of the somewhat poorly drained Parehat, Schodson, and Zun-

hall soils, which make up about 6,900 acres. It also includes the small areas of wetter soils along drainageways and in swales. Artificial drainage is needed in some of the wetter areas. Information on drainage design for each kind of soil is contained in the Technical Guide, available in local offices of the Soil Conservation Service.

Soil fertility is naturally low in the sandy soils and moderate to high in the loamy alluvial and wind-deposited soils. A large acreage of the wind-deposited soils has been farmed for many years. Cropping and erosion have gradually reduced the natural fertility.

The soils in the survey area range from the slightly acid Lanoak soils to the strongly alkaline Zunhall soils. Most are mildly to moderately alkaline.

The soils are inherently low in nitrogen. The rate at which nitrogen fertilizer should be applied depends on the available moisture. Much heavier rates of application can and should be used on the irrigated soils than on the dryfarmed soils. Phosphorus can be beneficial, especially on irrigated soils. On all soils, the addition of fertilizer should be based on the results of soil tests, on the need of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer to be applied.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil. Soils with good tilth are granular and porous.

Most of the soils used for crops in the survey area have a silt loam surface layer that is low to moderate in content of organic matter. Generally, the structure is weak. Regular additions of crop residue, manure, and other organic material can help to improve soil structure.

Fall plowing is not a good practice on sloping soils that are subject to erosion.

Minimum tillage is generally suggested for all cropland. It helps to reduce compaction and maintain soil structure.

Field crops suited to the soils and climate of the dryland part of the survey area include winter wheat, spring wheat, and barley. A small amount of alfalfa is grown for hay, but yields are low because of the limited moisture available.

The main crops produced in the irrigated areas are sugar beets, potatoes, winter wheat, spring wheat, and barley. The farmers that raise livestock also raise alfalfa for hay and pasture and corn that is generally cut for silage.

Latest information and suggestions on growing crops can be obtained from local offices of the Cooperative Extension Service and the Soil Conservation Service.

Yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil or that a given crop is not commonly irrigated.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes suited to the climate and the soil. A few farmers may be obtaining average yields higher than those shown in table 5.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residues, barnyard manure, and green-manure crops; harvesting crops with the smallest possible loss; and timeliness of all fieldwork.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown; that good quality irrigation water is uniformly applied in proper amounts as needed; and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of the soils for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not included because the acreage of these crops is small. The local offices of the Soil Conservation Service and the Cooperative Extension Service can provide information about the management concerns and productivity of the soils for these crops.

Capability classes and subclasses

Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope,

depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forest trees, or for engineering purposes.

In the capability system, all kinds of soil are grouped at three levels: capability class, subclass, and unit. These levels are defined in the following paragraphs. A survey area may not have soils of all classes.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and landforms have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability subclass is identified in the description of each soil mapping unit in the section "Soil maps for detailed planning."

Rangeland

This section was prepared by John Davis, range conservationist, Soil Conservation Service, Pocatello, Idaho.

Of the 697,430 acres in the Power County Soil Survey Area, approximately 33 percent is federal land primarily under the management of the Bureau of Land Management. Practically all of this federal land is classified as native rangeland.

In addition, some 80,000 acres, or 11 percent of the total acreage in the area, is presently classified as rangeland and is either private or state endowment land and is under private or state management. Therefore, about 308,000 acres, or 44 percent of the total survey area, is considered rangeland.

Cow/calf and purebred cattle are the chief livestock enterprises in the area. There are several dairies and also some sheep ranching. Some of the federal range is used by operators not based within the county.

With proper development and adequate water, about 35,000 acres of the present rangeland could be converted to irrigated cropland. This acreage is mainly the sandy soils north of the Snake River in the western part of the survey area.

The forage produced on the rangeland is used mainly in spring and fall. The native vegetation in many parts of the survey area has been greatly depleted by excessive use in the past. Even where protected from grazing, the more desirable native vegetation has been very slow to recover because of the scant precipitation in the area. The productivity of the more desirable native plants is probably a third of the amount originally produced. The productivity of the range can be increased by using management practices that are effective for the specific kind of soils and range sites.

Where climate and topography are about the same, differences in the kind and amount of vegetation that rangeland can produce are related closely to the kind of soil. Effective management is based on the relationships among soils, vegetation, and water.

Table 6 shows, for each kind of soil, the name of the range site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the expected percentage of each species in the composition of the potential natural plant community. Some soils not listed do not support a natural plant community of predominatly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. Others are not used for this purpose. The following are explanations of column headings in table 6.

A *range site* is a distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community. Soils that produce a similar kind, amount, and proportion of range plants are grouped into range sites. For those areas where the relationship between soils and vegeta-

tion has been established, range sites can be interpreted directly from the soil map. Properties that determine the capacity of the soil to supply moisture and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important.

Total production refers to the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year the amount and distribution of precipitation and the temperatures are such that growing conditions are substantially better than average; in a normal year these conditions are about average for the area; in an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight refers to the total air-dry vegetation produced per acre each year by the potential natural plant community. Vegetation that is highly palatable to livestock and vegetation that is unpalatable are included. Some of the vegetation can also be grazed extensively by wildlife.

Characteristic species of grasses, grasslike plants, forbs, and shrubs that make up most of the potential natural plant community on each soil are listed by common name. Under *Composition*, the expected proportion of each species is presented as the percentage, in air-dry weight, of the total annual production of herbaceous and woody plants. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season. Generally all of the vegetation produced is not used.

Range management requires, in addition to knowledge of the kinds of soil and the potential natural plant community, an evaluation of the present condition of the range vegetation in relation to its potential. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the maximum production of vegetation, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Windbreaks and environmental plantings

Windbreaks are established to protect livestock, buildings, and yards from wind and snow. Windbreaks also help protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broad-leaved and coniferous species provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field, the interval depending on erodibility of the soil. They protect cropland and crops from wind, hold snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. A healthy planting stock of suitable species planted properly on a well prepared site and maintained in good condition can insure a high degree of plant survival.

Table 7 shows the height that locally grown trees and shrubs are expected to reach on various kinds of soil in 20 years. The estimates in table 7, based on measurements and observation of established plantings that have been given adequate care, can be used as a guide in planning windbreaks and screens. Additional information about planning windbreaks and screens and the planting and care of trees can be obtained from local offices of the Soil Conservation Service or the Cooperative Extension Service or from nurserymen.

Engineering

This section provides information about the use of soils for building sites, sanitary facilities, construction material, and water management. Among those who can benefit from this information are engineers, landowners, community planners, town and city managers, land developers, builders, contractors, and farmers and ranchers.

The ratings in the engineering tables are based on test data and estimated data in the "Soil properties" section. The ratings were determined jointly by soil scientists and engineers of the Soil Conservation Service using known relationships between the soil properties and the behavior of soils in various engineering uses.

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock that is within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

On the basis of information assembled about soil properties, ranges of values can be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope sta-

bility, and other factors of expected soil behavior in engineering uses. As appropriate, these values can be applied to each major horizon of each soil or to the entire profile.

These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal systems, and other engineering works. The ranges of values can be used to (1) select potential residential, commercial, industrial, and recreational uses; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for location of sanitary landfills, onsite sewage disposal systems, and other waste disposal facilities; (5) plan detailed onsite investigations of soils and geology; (6) find sources of gravel, sand, clay, and topsoil; (7) plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land-use planning and for choosing alternative practices or general designs that will overcome unfavorable soil properties and minimize soil-related failures. Limitations to the use of these data, however, should be well understood. First, the data are generally not presented for soil material below a depth of 5 or 6 feet. Also, because of the scale of the detailed map in this soil survey, small areas of soils that differ from the dominant soil may be included in mapping. Thus, these data do not eliminate the need for onsite investigations, testing, and analysis by personnel having expertise in the specific use contemplated.

The information is presented mainly in tables. Table 8 shows, for each kind of soil, the degree and kind of limitations for building site development; table 9, for sanitary facilities; and table 11, for water management. Table 10 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

Some of the terms used in this soil survey have a special meaning in soil science. Many of these terms are defined in the Glossary.

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets are indicated in table 8. A *slight* limitation indicates that soil properties generally are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates that one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

Shallow excavations are made for pipelines, sewerlines, communications and power transmission lines, basements, and open ditches. Such digging or trenching is influenced by soil wetness caused by a seasonal high water table; the texture and consistence of soils; the tendency of soils to cave in or slough; and the presence of very firm, dense soil layers, bedrock, or large stones. In addition, excavations are affected by slope of the soil and the probability of flooding. Ratings do not apply to soil horizons below a depth of 6 feet unless otherwise noted.

In the soil series descriptions, the consistence of each soil horizon is given, and the presence of very firm or extremely firm horizons, usually difficult to excavate, is indicated.

Dwellings and *small commercial buildings* referred to in table 8 are built on undisturbed soil and have foundation loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings with and without basements. For such structures, soils should be sufficiently stable that cracking or subsidence of the structure from settling or shear failure of the foundation does not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, potential frost action, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Depth to bedrock, slope, and large stones in or on the soil are also important considerations in the choice of sites for these structures and were considered in determining the ratings. Susceptibility to flooding is a serious hazard.

Local roads and streets referred to in table 8 have an all-weather surface that can carry light to medium traffic all year. They consist of a subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a

flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The classifications of the soil and the soil texture, density, shrink-swell potential, and potential frost action are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding, slope, depth to hard rock or very compact layers, and content of large stones affect stability and ease of excavation.

Sanitary facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 9 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

If the degree of soil limitation is expressed as *slight*, soils are generally favorable for the specified use and limitations are minor and easily overcome; if *moderate*, soil properties or site features are unfavorable for the specified use, but limitations can be overcome by special planning and design; and if *severe*, soil properties or site features are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance is required. Soil suitability is rated by the terms *good*, *fair*, or *poor*, which, respectively, mean about the same as the terms *slight*, *moderate*, and *severe*.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. Only the soil horizons between depths of l8 and 72 inches are evaluated for this use. The soil properties and site features considered are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Stones, boulders, and shallowness to bedrock interfere with installation. Excessive slope can cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

In some soils, loose sand and gravel or fractured bedrock is less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table can be installed or the size of the absorption field can be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Soils that are very high in content of organic matter and those that have cobbles, stones, or boulders are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce the lagoon's capacity for liquid waste. Slope, depth to bedrock, and susceptibility to flooding also affect the suitability of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soil material affect the performance of embankments.

Sanitary landfill is a method of disposing of solid waste by placing refuse in successive layers either in excavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil material. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness can be a limitation, because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

Ease of excavation affects the suitability of a soil for the trench type of landfill. A suitable soil is deep to bedrock and free of large stones and boulders. If the seasonal water table is high, water will seep into trenches.

Unless otherwise stated, the limitations in table 9 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry periods. Soils that are loamy or silty and free of

stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas. These factors include slope, erodibility, and potential for plant growth.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 10 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 14 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*.

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 10 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 14.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slope, and amount of stones. The ability of the soil to support plantlife is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are free of stones and cobbles, are low in content of gravel, and have gentle slopes. They are low in soluble salts that can limit or prevent plant growth. They are naturally fertile or respond well to fertilizer. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy soils or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 11 the soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and has favorable stability, shrink-swell potential, shear strength, and compaction characteristics. Large stones and organic matter in a soil downgrade the suitability of a soil for use in embankments, dikes, and levees.

Drainage of soil is affected by such soil properties as permeability; texture; depth to bedrock, hardpan, or other layers that affect the rate of water movement; depth to the water table; slope; stability of ditchbanks; susceptibility to flooding; salinity and alkalinity; and availability of outlets for drainage.

Irrigation is affected by such features as slope, susceptibility to flooding, hazards of water erosion and soil blowing, texture, presence of salts and alkali, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, available water capacity, need for drainage, and depth to the water table.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to intercept runoff. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, wetness, and suitability for permanent vegetation.

Recreation

The Power County Area provides varying kinds of recreation for the more populated area, particularly Pocatello, Blackfoot, and Idaho Falls. The climate, geology, and vegetation provide interesting contrasts for summer and winter outdoor activities.

Boating, fishing, camping, and picnicking facilities are available at Massacre Rock State Park on the south bank of the Snake River.

The Minidoka National Wildlife Refuge is a sanctuary for migratory waterfowl.

Crystal Ice Caves and Great Rift area in the northwestern part of the survey area have unique volcanic formations.

American Falls Reservoir and the Snake River provide boating, fishing, and other water-based recreation. The state owned fish hatchery is about 1 mile downstream from the dam.

Hot springs and swimming and picnicking facilities are available at the Indian Springs Natatorium about 1 1/2 miles south of I-15 W on State Highway 37.

Mountainous areas provide hiking, hunting, snowmobiling, and cross-country skiing opportunities. Care is needed in traversing avalanche-prone areas. Drifting snow forming cornices at the crest of steep slopes is especially hazardous.

The soils of the survey area are rated in table 12 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 12 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 9, and interpretations for dwellings without basements and for local roads and streets, given in table 8.

Camp areas require such site preparation as shaping and leveling for tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but re-

mains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that will increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading.

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Wildlife habitat

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

In table 13, the soils in the survey area are rated according to their potential to support the main kinds of wildlife habitat in the area. This information can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

The elements of wildlife habitat are briefly described in the following paragraphs.

Grain and seed crops are seed-producing annuals used by wildlife. The major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Major soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, orchardgrass bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Major soil properties that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, wildrye, wheatgrass, and fescue.

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil properties that have a major effect on the growth of coniferous plants are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, or foliage used by wildlife or that provide cover and shade for some species of wildlife. Major soil properties that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and moisture. Examples of shrubs are mountainmahogany, bitterbrush, snowberry, and big sagebrush.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or

cover for wildlife that use wetland as habitat. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, saltgrass, and cordgrass and rushes, sedges, and reeds.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control structures in marshes or streams. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The kinds of wildlife habitat are briefly described in the following paragraphs.

Openland habitat consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kinds of wildlife attracted to these areas include pheasant, meadowlark, field sparrow, cottontail, and red fox.

Woodland habitat consists of areas of hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

Wetland habitat consists of open, marshy or swampy, shallow water areas where water-tolerant plants grow. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Rangeland habitat consists of areas of wild herbaceous plants and shrubs. Wildlife attracted to rangeland include antelope, desert mule deer, sage grouse, meadowlark, and lark bunting.

Soil properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of selected soil samples from typical profiles.

In making soil borings during field mapping, soil scientists can identify several important soil properties. They note the seasonal soil moisture condition or the presence of free water and its depth. For each horizon in the profile, they note the thickness and color of the soil material; the texture, or amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or the natural pattern of cracks and pores in the undisturbed soil; and the consistence of the soil material in place under the existing soil moisture conditions. They record the depth of plant roots, determine the pH or reaction of the soil, and identify any free carbonates.

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to determine all major properties of key soils, especially properties that cannot be estimated accurately by field observation. Laboratory analyses are not conducted for all soil series in the survey area, but laboratory data for many soil series not tested are available from nearby survey areas.

The available field and laboratory data are summarized in tables. The tables give the estimated range of engineering properties, the engineering classifications, and the physical and chemical properties of each major horizon of each soil in the survey area. They also present data about pertinent soil and water features, engineering test data, and data obtained from physical and chemical laboratory analyses of soils.

Engineering properties

Table 14 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 14 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

Texture is described in table 14 in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*1*).

The *Unified* system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter, plasticity index, liquid limit, and organic-matter content. Soils are grouped into 15 classes—eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils,

identified as Pt. Soils on the borderline between two classes have a dual classification symbol, for example, CL-ML.

The *AASHTO* system classifies soils according to those properties that affect their use in highway construction and maintenance. In this system a mineral soil is classified in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines. At the other extreme, in group A-7, are fine-grained soils. Highly organic soils are classified in group A-8 on the basis of visual inspection.

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The estimated AASHTO classification for soils tested in the survey area, without group index numbers, is given in table 14. Also in table 14 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and *plasticity index* indicate the effect of water on the strength and consistence of soil. These indexes are used in both the Unified and AASHTO soil classification systems. They are also used as indicators in making general predictions of soil behavior. Range in liquid limit and plasticity index is estimated on the basis of test data from the survey area or from nearby areas and on observations of the many soil borings made during the survey.

In some surveys, the estimates are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterburg limits extend a marginal amount across classification boundaries (1 or 2 percent), the classification in the marginal zone is omitted.

Physical and chemical properties

Table 15 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

Permeability is estimated on the basis of known relationships among the soil characteristics observed in the field—particularly soil structure, porosity, and gradation or texture—that influence the downward movement of water in the soil. The estimates are for vertical water movement when the soil is saturated. Not considered in the estimates is lateral seepage or such transient soil features as plowpans and surface crusts. Permeability of the soil is an important factor to be considered in planning and designing drainage systems, in evaluating the potential of soils for septic tank systems and other waste disposal systems, and in many other aspects of land use and management.

Available water capacity is rated on the basis of soil characteristics that influence the ability of the soil to hold water and make it available to plants. Important characteristics are content of organic matter, soil texture, and soil structure. Shallow-rooted plants are not likely to use the available water from the deeper soil horizons. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design of irrigation systems.

Soil reaction is expressed as a range in pH values. The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

Salinity is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of the nonirrigated soils. The salinity of individual irrigated fields is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of individual fields can differ greatly from the value given in table 15. Salinity affects the suitability of a soil for crop production, its stability when used as a construction material, and its potential to corrode metal and concrete.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others the swelling was estimated on the basis of the kind and amount of clay in the soil and on measurements of similar soils. The size of the load and the magnitude of the change in soil moisture content also influence the swelling of soils. Shrinking and swelling of some soils can cause damage to building foundations, basement walls, roads, and other structures unless special designs are used. A high shrink-swell potential indicates that special design and added expense may be required if the planned use of the soil will not tolerate large volume changes.

Risk of corrosion pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated

steel is related to soil moisture, particle-size distribution, total acidity, and electrical conductivity of the soil material. The rate of corrosion of concrete is based mainly on the sulfate content, texture, and acidity of the soil. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Uncoated steel intersecting soil boundaries or soil horizons is more susceptible to corrosion than an installation that is entirely within one kind of soil or within one soil horizon.

Erosion factors are used to predict the erodibility of a soil and its tolerance to erosion in relation to specific kinds of land use and treatment. The soil erodibility factor (K) is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values range from 0.10 to 0.64. To estimate annual soil loss per acre, the K value of a soil is modified by factors representing plant cover, grade and length of slope, management practices, and climate. The soil-loss tolerance factor (T) is the maximum rate of soil erosion, whether from rainfall or soil blowing, that can occur without reducing crop production or environmental quality. The rate is expressed in tons of soil loss per acre per year.

Wind erodibility groups are made up of soils that have similar properties that affect their resistance to soil blowing if cultivated. The groups are used to predict the susceptibility of soil to blowing and the amount of soil lost as a result of blowing. Soils are grouped according to the following distinctions:

1. Sands, coarse sands, fine sands, and very fine sands. These soils are extremely erodible, so vegetation is difficult to establish. They are generally not suitable for crops.

2. Loamy sands, loamy fine sands, and loamy very fine sands. These soils are very highly erodible, but crops can be grown if intensive measures to control soil blowing are used.

3. Sandy loams, coarse sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible, but crops can be grown if intensive measures to control soil blowing are used.

4L. Calcareous loamy soils that are less than 35 percent clay and more than 5 percent finely divided calcium carbonate. These soils are erodible, but crops can be grown if intensive measures to control soil blowing are used.

4. Clays, silty clays, clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible, but crops can be grown if measures to control soil blowing are used.

5. Loamy soils that are less than 18 percent clay and less than 5 percent finely divided calcium carbonate and sandy clay loams and sandy clays that are less than 5 percent finely divided calcium carbonate. These soils are slightly erodible, but crops can be grown if measures to control soil blowing are used.

6. Loamy soils that are 18 to 35 percent clay and less than 5 percent finely divided calcium carbonate, except silty clay loams. These soils are very slightly erodible, and crops can easily be grown.

7. Silty clay loams that are less than 35 percent clay and less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible, and crops can easily be grown.

8. Stony or gravelly soils and other soils not subject to soil blowing.

Soil and water features

Table 16 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four groups on the basis of the intake of water after the soils have been wetted and have received precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils that have a layer that impedes the downward movement of water or soils that have moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clay soils that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding is the temporary covering of soil with water from overflowing streams, with runoff from adjacent slopes, and by tides. Water standing for short periods after rains or after snow melts is not considered flooding, nor is water in swamps and marshes. Flooding is rated in general terms that describe the frequency and duration of flooding and the time of year when flooding is most likely. The ratings are based on evidence in the soil profile of the effects of flooding, namely thin strata of gravel, sand, silt, or, in places, clay deposited by floodwater; irregular decrease in organic-matter content with increasing depth; and absence of distinctive soil horizons

that form in soils of the area that are not subject to flooding. The ratings are also based on local information about floodwater levels in the area and the extent of flooding and on information that relates the position of each soil on the landscape to historic floods.

The generalized description of flood hazards is of value in land-use planning and provides a valid basis for land-use restrictions. The soil data are less specific, however, than those provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table is the highest level of a saturated zone more than 6 inches thick for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed in many borings made during the course of the soil survey. Indicated in table 16 are the depth to the seasonal high water table and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Depth to bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based on measurements made in many soil borings and on other observations during the mapping of the soils. The kind of bedrock and its hardness as related to ease of excavation are also shown. Rippable bedrock can be excavated with a single-tooth ripping attachment on a 200-horsepower tractor, but hard bedrock generally requires blasting.

Cemented pans are hard subsurface layers, within a depth of 5 or 6 feet, that are strongly compacted (indurated). Such pans cause difficulty in excavation. The hardness of pans is similar to that of bedrock. A rippable pan can be excavated, but a hard pan generally requires blasting.

Potential frost action refers to the likelihood of damage to pavements and other structures by frost heaving and low soil strength after thawing. Frost action results from the movement of soil moisture into the freezing temperature zone in the soil, which causes ice lenses to form. Soil texture, temperature, moisture content, porosity, permeability, and content of organic matter are the most important soil properties that affect frost action. It is assumed that the soil is not covered by insulating vegetation or snow and is not artificially drained. Silty and clayey soils that have a high water table in winter are most susceptible to frost action. Well drained very gravelly or sandy soils are the least susceptible.

Classification of the soils

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to "Soil taxonomy" (*6*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 17, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol*. An example is Mollisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Xeroll (*Xer*, meaning dry, plus *oll*, from Mollisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Argixeroll (*Argi*, meaning argillic horizons, plus *xeroll*, the suborder of Mollisols that have a Xeric moisture regime).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great

group. The adjective *Typic* identifies the subgroup that is thought to typify the great group. An example is Typic Argixerolls.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is fine, montmorillonitic, frigid, Typic Argixerolls.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

Soil series and morphology

In this section, each soil series recognized in the survey area is described in detail. The descriptions are arranged in alphabetic order by series name.

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual (*5*). Unless otherwise noted, colors described are for dry soil.

Following the pedon description is the range of important characteristics of the soil series in this survey area. Phases, or mapping units, of each soil series are described in the section "Soil maps for detailed planning."

Ammon series

The Ammon series consists of very deep, well drained soils that formed in alluvium derived from loess. These soils are on alluvial fans and foot slopes. Slopes are 0 to 3 percent. The mean annual precipitation is about 12 inches. The mean annual soil temperature is about 44 degrees F.

Ammon soils are similar to Arbone, Lanoak, Neeley, Newdale, and Parehat soils. They are near Arbone, Newdale, Wheelerville, and Zunhall soils. Arbone soils are loam throughout and have a B horizon. Lanoak soils have a Bt horizon. Neeley and Newdale soils are strongly calcareous below 10 to 20 inches. Parehat and Zunhall soils are somewhat poorly drained. Wheelerville soils have an ochric epipedon and are more than 20 percent cicada nodules.

Typical pedon of Ammon silt loam, 0 to 3 percent slopes, about 1 mile northwest of Pauline on State Highway 38 SE1/4SW1/4 sec. 2, T. 10 S., R. 33 E.

A11—0 to 7 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure and weak thin platy; slightly hard, friable, slightly sticky, and slightly plastic; many fine and very fine roots; common fine and very fine tubular pores; slightly calcareous; moderately alkaline (pH 8.0); clear smooth boundary.

A12—7 to 13 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; few medium and many fine and very fine roots; many fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.2); clear smooth boundary.

C1ca—13 to 24 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; massive; hard, friable, slightly sticky, and slightly plastic; few medium and common fine and very fine roots; many fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.2); clear wavy boundary.

C2ca—24 to 42 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; massive; hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine tubular pores; moderately calcareous; moderately alkaline (pH 8.4); clear smooth boundary.

C3ca—42 to 56 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; massive; hard, friable, slightly sticky, and slightly plastic; few fine and very fine roots; many fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.2); abrupt smooth boundary.

C4ca—56 to 63 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; very few fine roots; many fine and very fine tubular pores; moderately calcareous; mildly alkaline (pH 7.6).

The A horizon is 10 to 13 inches thick. Reaction ranges from neutral to moderately alkaline.

The A1 horizon is grayish brown or dark grayish brown. The C horizon ranges from dark grayish brown to light gray. This horizon is silt loam and above a depth of 40 inches averages less than 18 percent clay. The lime is generally distributed throughout the profile, but soft powdery secondary lime is in the lower part in some pedons. The upper few inches of the profile is noncalcareous in some areas.

Arbone series

The Arbone series consists of very deep, well drained soils that formed in loess and mixed alluvium. These soils are on alluvial fans and terraces. Slopes range from 0 to 30 percent. The mean annual precipitation is about 14 inches. The mean annual soil temperature is 45 degrees F.

Arbone soils are similar to Arbone variant, Hondoho, Lanoak, Newdale, and Rexburg soils. They are near Ammon, Hymas, Ricrest, and Wheelerville soils. Arbone variant soils average between 18 and 35 percent clay between depths of 10 and 40 inches. Hondoho soils are more than 35 percent coarse fragments. Ammon, Lanoak, Newdale, Rexburg, and Wheelerville soils are silt loam throughout. Ricrest soils have a very dark gray A horizon more than 20 inches thick.

Typical pedon of Arbone loam, 4 to 12 percent slopes, about 1 1/2 miles southwest of Arbon, 800 feet north of center of sec. 28, T. 11 S., R. 33 E.

Ap—0 to 7 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; slightly hard, very friable, slightly sticky, and slightly plastic; common fine and very fine roots; many very fine interstitial pores; about 5 percent angular gravel; mildly alkaline (pH 7.6); gradual smooth boundary.

A12—7 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; slightly hard, very friable, slightly sticky, and slightly plastic; common fine and very fine roots; many very fine tubular pores; about 5 percent angular gravel; mildly alkaline (pH 7.4); gradual wavy boundary.

B2—10 to 14 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium and fine subangular blocky structure; slightly hard, very friable, slightly sticky, and slightly plastic; common fine and very fine roots; many very fine and fine tubular pores; about 5 percent angular gravel; mildly alkaline (pH 7.4); clear wavy boundary.

B3ca—l4 to 19 inches; light brownish gray (10YR 6/2) and light gray (10YR 7/2) loam, dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) moist; weak medium and fine subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; common fine and very fine roots; many very fine and fine tubular pores; about 3 percent angular fine gravel; strongly calcareous; common lime veins and spots; mildly alkaline (pH 7.6); gradual smooth boundary.

C1ca—19 to 38 inches; white (10YR 8/2) and light gray (10YR 7/2) loam, light brownish gray (10YR 6/2) and pale brown (10YR 6/3) moist; massive; hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many very fine tubular pores; about 3 percent angular fine gravel; strongly calcareous; many lime veins and splotches; mildly alkaline (pH 7.8); gradual wavy boundary.

C2ca—38 to 60 inches; light brown (7.5YR 6/3) loam, brown (7.5YR 4/3) moist; massive; hard, firm, slightly sticky, and slightly plastic; few fine and very fine roots; many very fine tubular pores; about 4 percent subangular fine gravel; moderately calcareous; common lime veins and splotches; mildly alkaline (pH 7.8).

The solum is 14 to 28 inches thick. It is 0 to 10 percent coarse fragments. Reaction ranges from mildly to moderately alkaline.

The A1 horizon is brown, grayish brown, or dark grayish brown. The B2 horizon is brown, grayish brown, or light gray. It is dominantly loam that is 13 to 18 percent clay. The C horizon is white, light gray, or light brown. The soil is strongly calcareous below depths of 12 to 25 inches.

Arbone variant

The Arbone variant consists of very deep, well drained soils that formed in alluvium derived from loess and weathered sedimentary rocks. These soils are on low terraces and the lower part of alluvial fans. Slopes are 0 to 4 percent. The mean annual precipitation is about 14 inches. The mean annual soil temperature is about 45 degrees F.

Arbone variant soils are similar to Arbone and Newdale soils. They are near Hondoho, Lanoak, Rexburg, Wheelerville, and Zunhall soils. Arbone, Newdale, Rexburg, and Wheelerville soils average less than 18 percent clay in the control section. Hondoho soils are more than 35 percent coarse fragments in the control section. Lanoak soils are noncalcareous above 35 to 40 inches. Zunhall soils are somewhat poorly drained.

Typical pedon of Arbone Variant silt loam, 0 to 4 percent slopes, 0.4 mile north of Oneida County line, NW1/4SE1/4 sec. 35, T. 11 S., R. 33 E.

Ap—0 to 5 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to weak fine granular; slightly hard, friable, slightly sticky, and slightly plastic, many fine and very fine roots; common fine and very fine tubular pores; moderately alkaline (pH 8.2); abrupt wavy boundary.

B2t—5 to 11 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; common thin clay films on faces of peds and lining pores; moderately alkaline (pH 8.2); abrupt wavy boundary.

B3tca—11 to 19 inches; very pale brown (10YR 7/3) silty clay loam, brown (10YR 5/3) moist; weak medium and fine subangular blocky structure; hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; few thin clay films on faces of peds; strongly calcareous; few hard cicada nodules; moderately alkaline (pH 8.4); abrupt wavy boundary.

C1ca—19 to 33 inches; white (10YR 8/1) silty clay loam, very pale brown (10YR 7/3) moist; massive; hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; very strongly calcareous; common hard nodules of soil material; moderately alkaline (pH 8.4); abrupt irregular boundary.

C2ca—33 to 45 inches; light gray (10YR 7/2) silt loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many fine and very fine tubular pores; very strongly calcareous; very strongly alkaline (pH 9.2); abrupt irregular boundary.

C3ca—45 to 65 inches; light gray (10YR 7/2) loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few tubular pores; strongly calcareous; very strongly alkaline (pH 9.2).

The solum is 15 to 25 inches thick. Reaction is mildly or moderately alkaline in the B horizon and moderately to very strongly alkaline in the C horizon.

The A1 horizon is grayish brown or dark grayish brown. The B2t horizon is grayish brown or dark grayish brown. It ranges from heavy silt loam to loam and is calcareous in some areas. The C horizon is light gray or white. It is loam, silt loam, clay loam, or silty clay loam and is stratified in some pedons.

Clems series

The Clems series consists of very deep, well drained soils that formed in eolian material of mixed origin. These soils are on basalt plains and terraces. Slopes are 0 to 20 percent. The mean annual precipitation is about 10 inches. The mean annual soil temperature is about 49 degrees F.

Clems soils are similar to Kecko and Vining soils. They are near Portino, Quincy, Trevino, and Wapi soils. Kecko soils have calcium carbonates within a depth of 30 inches. Vining, Portino, Trevino, and Wapi soils have basalt bedrock within 40 inches. Quincy soils are fine sand and loamy fine sand throughout and do not have a B horizon.

Typical pedon of Clems fine sandy loam in an area of Kecko-Clems-Vining association, undulating, about 2 miles north of Minidoka Migratory Waterfowl Refuge, SW1/4NE1/4 sec. 5, T. 9 S., R. 28 E.

A1—0 to 7 inches; brown (10YR 4/3) fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky, and slightly plastic; many fine and very fine roots; many fine interstitial pores; neutral (pH 7.0); diffuse smooth boundary.

B21—7 to 12 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky, and slightly plastic; many fine and very fine roots; common very fine tubular pores; neutral (pH 7.0); diffuse smooth boundary.

B22—12 to 23 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3.3) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky, and slightly plastic; many fine and very fine roots; common very fine tubular pores; neutral (pH 6.8); clear smooth boundary.

C1—23 to 44 inches; yellowish brown (10YR 5/6) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky, and slightly plastic; common fine and very fine roots; common very fine tubular pores; neutral (pH 6.8); diffuse smooth boundary.

C2—44 to 70 inches; yellowish brown (10YR 5/6) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky, and slightly plastic; common fine and very fine roots; common very fine tubular pores; neutral (pH 6.8).

The solum is 16 to 36 inches thick. In some areas the soil is calcareous below 45 inches. Reaction ranges from neutral through moderately alkaline.

The A1 horizon is grayish brown or brown. The B2 horizon is fine sandy loam or sandy loam. Some pedons have a trace of fine pebbles.

Declo series

The Declo series consists of very deep, well drained soils that formed in alluvium or lake-laid sediments that have been somewhat reworked by wind. These soils are on terraces. Slopes are 0 to 20 percent. The mean annual precipitation is about 9 inches. The mean annual soil temperature is about 50 degrees F.

Declo soils are similar to Escalante and Kecko soils. They are near Paniogue, Portino, and Trevino soils. Escalante and Kecko soils are dominantly fine sandy loam between depths of 10 and 40 inches. Paniogue soils have sand and gravel within a depth of 40 inches. Portino and Trevino soils have basalt bedrock within 40 inches.

Typical pedon of Declo loam, 2 to 4 percent slopes, about 7 1/2 miles northeast of American Falls, SE1/4SE1/4 sec. 30, T. 6 S., R. 32 E.

Ap—0 to 11 inches; grayish brown (10YR 5/2) loam, brown (10YR 4/3) moist; weak coarse and medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and very fine roots; common very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.0); abrupt wavy boundary.

C1—11 to 21 inches; white (10YR 8/2) loam, light brownish gray (10YR 6/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common very fine roots; common very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.4); clear smooth boundary.

C2—21 to 29 inches; white (10YR 8/1) loam, light grayish brown (10YR 6/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few very fine roots; common very fine tubular pores; about 10 percent soft nodules of soil material; strongly calcareous; moderately alkaline (pH 8.4); diffuse smooth boundary.

C3—29 to 39 inches; white (10YR 8/1) loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few very fine roots; few very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.2); clear smooth boundary.

C4—39 to 60 inches; white (10YR 8/1) loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; many very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.2).

The soil is slightly or moderately calcareous in the A horizon and strongly calcareous in the C horizon. Reaction ranges from mildly to moderately alkaline in the profile.

The A1 horizon is grayish brown or light brownish gray. It is loam or fine sandy loam. In some places the soil has a B horizon that is light brownish gray or pale brown. The C horizon is white or light gray. Some areas have stratified sediments at depths of 25 to 36 inches.

Declo variant

The Declo variant consists of very deep, well drained soils that formed in mixed alluvium and colluvium. These soils are on low terraces adjacent to the Snake River. Slopes are 2 to 4 percent. The mean annual precipitation is about 9 inches. The mean annual soil temperature is about 50 degrees F.

Declo variant soils are similar to Declo soils. They are near Clems, Escalante, Feltham, Kecko, and Vining soils. Declo soils are less than 15 percent coarse fragments. Clems, Escalante, and Kecko soils are fine sandy loam throughout and are less than 15 percent coarse fragments. Feltham soils are loamy sand to a depth of 25 to 40 inches. The moderately deep Vining soils are fine sandy loam over basalt.

Typical pedon of Declo Variant bouldery loam, 2 to 4 percent slopes, 0.2 mile north of Bonanza Bar, Snake River, NW1/4SE1/4 sec. l8, T. 9 S., R. 29 E.

A1—0 to 5 inches; brown (10YR 5/3) bouldery loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable, slightly sticky, and slightly plastic; many fine and very fine roots; many interstitial pores; about 3 percent boulders, stones, cobbles, and gravel; neutral (pH 6.6); diffuse smooth boundary.

B2—5 to 13 inches; pale brown (10YR 6/3) loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky, and slightly plastic; common fine and very fine roots; common very fine tubular pores; about 3 percent boulders, stones, cobbles, and gravel; neutral (pH 6.8); clear smooth boundary.

C1ca—13 to 17 inches; light gray (10YR 7/2) very bouldery loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common very fine roots; common very fine tubular pores; about 55 percent boulders, stones, cobbles, and gravel; strongly calcareous; mildly alkaline (pH 7.4); clear smooth boundary.

C2ca—17 to 60 inches; light gray (10YR 7/1) very bouldery loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few fine and very fine roots; common fine tubular pores; about 70 percent boulders, stones, cobbles, and gravel; strongly calcareous; mildly alkaline (pH 7.4).

The surface is about 1 to 3 percent boulders that are 2 to over 4 feet in diameter. Boulders, stones, cobbles, and gravel increase to about 70 percent below 17 inches.

The solum is 8 to 18 inches thick. Reaction ranges from neutral through moderately alkaline.

Dranyon series

The Dranyon series consists of very deep, well drained soils. These soils formed mainly in material that weathered from fine-grained sandstone and has had varying additions of loess and colluvial materials in places. They are on uplands and mountains. Slopes are 4 to 30 percent. The mean annual precipitation is about 20 inches. The mean annual soil temperature is about 40 degrees F.

Dranyon soils are similar to Manila and Ricrest soils. They are near Hymas, Moohoo, Pavohroo, Ridgecrest, Sheege, and Wahtigup soils. Manila soils are more than 35 percent clay in the control section. Ricrest soils have a B horizon and a strongly calcareous substratum.

Hymas and Sheege soils have limestone bedrock at 10 to 20 inches. Moohoo soils are more than 35 percent coarse fragments in the 10 to 40 inch control section. Pavohroo soils have a mollic epipedon more than 16 inches thick. Ridgecrest soils are more than 35 percent coarse fragments in the texture control section and have limestone bedrock at 20 to 40 inches. Wahtigup soils are more than 35 percent coarse fragments in the 10 to 40 inch control section.

Typical pedon of Dranyon loam in an area of Dranyon-Ricrest association, steep, about one-half mile north of Oneida County line, SE1/4SE1/4 sec. 34, T. 12 S., R. 32 E.

O1—2 1/4 to 1 inch; undecomposed leaves and twigs, primarily from aspen and understory; abrupt wavy boundary.

O2—1 inch to 0; decomposed and partly decomposed leaves and twigs; abrupt wavy boundary.

A11—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky, and slightly plastic; common coarse and many medium, fine, and very fine roots; common fine and very fine interstitial pores; about 10 percent angular gravel; medium acid (pH 5.6); clear smooth boundary.

2—3 to 9 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common coarse and many medium, fine, and very fine roots; few fine and very fine tubular and interstitial pores; about 10 percent angular gravel and 5 percent cobbles; medium acid (pH 5.6); abrupt smooth boundary.

B1t—9 to 17 inches; grayish brown (10YR 5/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; hard, friable, sticky, and plastic; few coarse, common medium, and many fine and very fine roots; many fine and very fine tubular pores; about 15 percent angular gravel and 10 percent cobbles; medium acid (pH 5.6); clear smooth boundary.

B21t—17 to 25 inches; brown (10YR 5/3) gravelly silty clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, friable, sticky, and plastic; few coarse, common medium, and many fine and very fine roots; many fine and very fine tubular pores; thin nearly continuous clay films on faces of peds; about 15 percent angular gravel and 10 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

B22t—25 to 39 inches; pale brown (10YR 6/3) gravelly silty clay loam, brown (10YR 5/3) moist; weak medium prismatic structure; hard, friable, sticky, and plastic; few medium and common fine and very fine roots; many fine and very fine tubular pores; thin nearly continuous clay films on faces of peds; about 15 percent angular gravel and 10 percent cobbles; slightly acid (pH 6.1); clear smooth boundary.

B23t—39 to 63 inches; pale brown (10YR 6/3) clay loam, yellowish brown (10YR 5/4); moist; weak medium prismatic structure; hard, friable, sticky, and plastic; few medium and common fine and very fine roots; many fine and very fine tubular pores; thin nearly continuous clay films on faces of peds; about 5 percent angular gravel and 5 percent cobbles; slightly acid (pH 6.1).

The solum is 30 to 65 inches thick. It is 10 to 25 percent coarse fragments. Reaction ranges from strongly acid to slightly acid.

The A1 horizon is dark grayish brown or very dark brown. The B2t horizon is brown or pale brown. It ranges from clay loam to silty clay loam and may be gravelly, cobbly, or stony.

Escalante series

The Escalante series consists of very deep, well drained soils. These soils formed in very deep alluvium that has had additions of windblown material in the upper part. They are on alluvial fans and terraces. Slopes are 2 to 12 percent. The mean annual precipitation is about 10 inches. The mean annual soil temperature is about 49 degrees F.

Escalante soils are similar to Kecko, Paniogue, and Clems soils. They are near Feltham, Vining, Trevino, Portino, and Quincy soils. Kecko and Paniogue soils have a B2 horizon. Clems soils have a B2 horizon and are noncalcareous above 45 inches. Feltham soils have a coarse textured control section. Vining soils have basalt bedrock at 10 to 20 inches. Portino soils are loam or silt loam throughout and have basalt bedrock at 20 to 40 inches. Quincy soils are coarse textured throughout the profile.

Typical pedon of Escalante fine sandy loam in an area of Kecko-Escalante complex, 2 to 4 percent slopes, about 4 miles south of Bonanza Lake, SW1/4NW1/4 sec. 9, T. 9 S., R. 29 E.

A11—0 to 3 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure parting to weak fine granular; soft, very friable, slightly sticky, and slightly plastic; many medium, fine, and very fine roots; many fine and very fine interstitial pores; slightly calcareous; mildly alkaline (pH 7.8); abrupt smooth boundary.

A12—3 to 6 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky, and slightly plastic; common medium and many fine and very fine roots; many fine and very fine interstitial pores; slightly calcareous; moderately alkaline (pH 8.0); clear smooth boundary.

C1ca—6 to 18 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky, and slightly plastic; common medium and many fine and very fine roots; many fine and very fine interstitial pores; moderately calcareous; moderately alkaline (pH 8.2); clear smooth boundary.

C2ca—18 to 32 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 4/3) moist; massive; soft, friable, slightly sticky, and slightly plastic; common medium and many fine and very fine roots; common fine and very fine tubular pores; very strongly calcareous; moderately alkaline (pH 8.4); clear wavy boundary.

C3ca—32 to 46 inches; light gray (10YR 7/2) fine sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky, and nonplastic; few medium and many fine and very fine roots; common very fine tubular pores; very strongly calcareous; moderately alkaline (pH 8.4); clear wavy boundary.

C4ca—46 to 65 inches; light gray (10YR 7/2) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; weakly cemented; very hard, very firm, nonsticky, and nonplastic; few fine and very fine roots; few fine and very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.0).

The A horizon is light brownish gray or light brown. It is slightly or moderately calcareous. The C horizon is light brownish gray or light gray. It is moderately to very strongly calcareous. Reaction is moderately or strongly alkaline. There are weakly cemented layers in the C horizon of some pedons.

Feltham series

The Feltham series consists of very deep, somewhat excessively drained soils that formed in alluvium reworked by wind in the upper part. These soils are on terraces and alluvial fans. Slopes are 0 to 12 percent. The mean annual precipitation is about 9 inches. The mean annual soil temperature is about 50 degrees F.

Feltham soils are similar to Quincy soils. They are near Declo, Escalante, and Kecko soils. Quincy soils are coarse textured throughout. Declo soils are medium textured. Escalante and Kecko soils are dominantly moderately coarse textured in the 10 to 40 inch control section.

Typical pedon of Feltham loamy sand, 0 to 2 percent slopes, about 2 miles southwest of Morgan's Water Hole, SE1/4SE1/4 sec. 14, T. 9 S., R. 28 E.

A1—0 to 6 inches; grayish brown (2.5Y 5/2) loamy sand, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; soft, very friable, nonsticky, and nonplastic; many fine and very fine roots; many interstitial pores; mildly alkaline (pH 7.4); clear smooth boundary.

C1—6 to 19 inches; light brownish gray (10YR 6/2) loamy sand, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky, and nonplastic; common fine and very fine roots; few fine tubular pores; mildly alkaline (pH 7.6); diffuse smooth boundary.

C2—19 to 35 inches; brown (10YR 5/3) loamy sand, dark brown (10YR 3/3) moist; massive; slightly hard, friable, nonsticky, and nonplastic; few medium and very fine roots; few fine tubular pores; mildly alkaline (pH 7.8); diffuse smooth boundary.

C3ca—35 to 45 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky, and slightly plastic; few medium and very fine roots; few fine tubular pores; moderately calcareous; moderately alkaline (pH 8.2); abrupt smooth boundary.

IIC4ca—45 to 63 inches; light gray (10YR 7/2) loam, pale brown (10YR 6/3) moist; massive; hard, firm, slightly sticky, and slightly plastic; common fine tubular pores; strongly calcareous; strongly alkaline (pH 8.6).

The depth to calcareous material ranges from 25 to 35 inches.

The A horizon and the upper part of the C horizon are dominantly grayish brown, brown, or light brownish gray. The color is mainly the result of dark colored minerals. The lower part of the C horizon is dominantly light gray or pale brown.

Hondoho series

The Hondoho series consists of very deep, well drained soils that formed in material weathered from

quartzite or sandstone bedrock and mixed with loess. These soils are on rolling to very steep uplands and mountains. Slopes are 4 to 60 percent. The mean annual precipitation is about 14 inches. The mean annual soil temperature is about 45 degrees F.

Hondoho soils are similar to Ricrest, Ridgecrest, and Wahtigup soils. They are near Hymas, Newdale, Pavohroo, Rexburg, and Wheelerville soils. Hymas soils have limestone bedrock at 10 to 20 inches. Newdale and Rexburg soils are silt loam throughout and have a B horizon. The solum of Pavohroo soils is 30 to 45 inches thick, and that of Ricrest soils is 20 to 30 inches thick. Ridgecrest soils have limestone bedrock at depths between 20 and 40 inches. Wahtigup soils are calcareous throughout. Wheelerville soils are moderately calcareous and are silt loam throughout.

Typical pedon of Hondoho gravelly loam in an area of Arbone-Hondoho association, hilly, about 2 miles west of Arbon, NE1/4SW1/4 sec. 21, T. 11 S., R. 33 E.

Ap—0 to 8 inches; brown (10YR 4/3) gravelly loam, dark brown (10YR 3/3) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky, and slightly plastic; common very fine roots; many interstitial pores; about 15 percent fine gravel; mildly alkaline (pH 7.8); clear smooth boundary.

B2—8 to 12 inches; grayish brown (10YR 5/2) gravelly loam, brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common very fine roots; common very fine tubular pores; about 15 percent fine gravel; moderately calcareous; moderately alkaline (pH 8.2); clear smooth boundary.

C1ca—12 to 25 inches; very pale brown (10YR 7/3) gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few very fine roots; common very fine tubular pores; about 25 percent gravel and 5 percent cobbles; very strongly calcareous; moderately alkaline (pH 8.4); clear irregular boundary.

C2ca—25 to 41 inches; very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few very fine roots; common very fine tubular pores; abut 35 percent gravel, 10 percent cobbles, and 5 percent stones; strongly calcareous; moderately alkaline (pH 8.4); clear irregular boundary.

C3ca—41 to 65 inches; very pale brown (10YR 8/3) very cobbly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; no roots or pores observed; about 25 percent cobbles, 20 percent gravel, and 15 percent stones; very strongly calcareous; moderately alkaline (pH 8.4).

The solum is about 10 to 15 inches thick. It is 10 to 15 percent coarse fragments.

The A horizon is grayish brown or brown. The B horizon is pale brown or grayish brown. The C horizon is pale brown or very pale brown.

Hymas series

The Hymas series consists of shallow, well drained soils. These soils formed in material that weathered from limestone and has had additions of loess and colluvium in the upper part. They are on mountain ridges. Slopes are 30 to 60 percent. The mean annual precipitation is about 15 inches. The mean annual soil temperature is about 45 degrees F. The mean summer soil temperature is about 60 degrees F.

Hymas soils are similar to Sheege soils. They are near Dranyon, Moohoo, Pavohroo, Ricrest, Ridgecrest, and Wahtigup soils. Sheege soils have a mean summer soil temperature of about 58 degrees F. Ricrest, Ridgecrest, and Wahtigup soils are all deeper than 20 inches.

Typical pedon of Hymas extremely stony loam in an area of Hymas-Wahtigup-Ridgecrest complex, very steep, about 7 miles southeast of Rockland, SW1/4NE1/4 sec. 30, T. 10 S., R. 32 E.

A1—0 to 7 inches; grayish brown (10YR 5/2) extremely stony loam, dark brown (10YR 3/3) moist; moderate medium and fine granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine interstitial pores; about 40 percent limestone gravel and stones; strongly calcareous; mildly alkaline (pH 7.4); gradual smooth boundary.

C—7 to 18 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common very fine and fine roots; many fine and very fine tubular pores; about 45 percent limestone gravel and stones; strongly calcareous; mildly alkaline (pH 7.6); abrupt wavy boundary.

R—18 inches; gray fractured limestone bedrock.

Reaction ranges from mildly through moderately alkaline.

The A1 horizon is grayish brown or brown. The C horizon is light brownish gray or brown and is more than 35 percent rock fragments.

Kecko series

The Kecko series consists of very deep, well drained soils formed in alluvium that has had additions of windblown material of mixed origin in the upper part. These soils are on basalt plains, low alluvial fans, and low terraces. Slopes are 0 to 20 percent but are dominantly less than 8 percent. The mean annual precipitation is

about 10 inches. The mean annual soil temperature is about 49 degrees F.

Kecko soils are similar to Clems and Vining soils. They are near Portino, Quincy, Trevino, Wapi, and Escalante soils. Clems soils do not have calcium carbonates within 40 inches. Escalante soils do not have a B horizon. Vining, Portino, Trevino, and Wapi soils have basalt bedrock at depths of less than 40 inches. Quincy soils are fine sand and loamy fine sand throughout.

Typical pedon of Kecko fine sandy loam in an area of Kecko-Escalante complex, 2 to 4 percent slopes, about 6 miles northeast of American Falls, in center of SE1/4 sec. 31, T. 6 S., R. 32 E.

Ap—0 to 9 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium and fine subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky, and nonplastic; many fine and very fine roots; many interstitial pores; mildly alkaline (pH 7.8); abrupt smooth boundary.

B1—9 to 19 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky, and nonplastic; many very fine roots; common very fine tubular pores; moderately alkaline (pH 8.0); clear smooth boundary.

B2—19 to 29 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; weak medium prismatic structure parting to weak medium and fine subangular blocky; slightly hard, friable, slightly sticky, and slightly plastic; common very fine roots; many very fine tubular pores; moderately alkaline (pH 8.0); clear smooth boundary.

IIC1ca—29 to 34 inches; white (10YR 8/2) fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few medium, fine, and very fine roots; common very fine tubular pores; very strongly calcareous; moderately alkaline (pH 8.2); clear smooth boundary.

IIIC2ca—34 to 40 inches; very pale brown (10YR 8/3) loamy fine sand, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky, and nonplastic; many very fine interstitial pores; strongly calcareous; moderately alkaline (pH 8.2); abrupt smooth boundary.

IVC3—40 to 65 inches; light gray (10YR 7/1) fine sand, light brownish gray (10YR 6/2) moist; single grain; loose, nonsticky, and nonplastic; moderately alkaline (pH 8.0)

The thickness of the solum and the depth to the stratified calcareous C horizon range from 15 to 30 inches. Reaction ranges from mildly to moderately alkaline in the solum.

The A horizon is light brownish gray or pale brown. The B horizon is pale brown, grayish brown, or brown. It ranges from fine sandy loam to loam. The stratified C horizon is white, very pale brown, light gray, and light brownish gray. It is fine sandy loam, loamy fine sand, and fine sand. The average texture of the layer between 10 and 40 inches is moderately coarse, and it is less than 18 percent clay.

Kucera series

The Kucera series consists of very deep, well drained soils that formed in thick loess. These soils are on northerly slopes of hills and ridges. Slopes are 20 to 60 percent. The mean annual precipitation is about 14 inches. The mean annual soil temperature is about 45 degrees F.

Kucera soils are similar to McDole, Neeley, Newdale, Rexburg, and Lanoak soils. They are near Pocatello and Wheeler soils. McDole, Neeley, Pocatello, and Wheeler soils have a mean annual soil temperature of about 50 degrees F. Lanoak soils are more than 18 percent clay in the control section. Newdale soils have a calcic horizon at 10 to 18 inches. Rexburg soils have a mollic epipedon that is less than 20 inches thick.

Typical pedon of Kucera silt loam, steep, about 2 miles southeast of American Falls, SE1/4SW1/4 sec. 3, T. 8 S., R. 31 E.

Ap1—0 to 3 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak thin platy and weak fine granular structure; soft, very friable, slightly sticky, and slightly plastic; common medium and many fine and very fine roots; many fine and very fine interstitial pores; mildly alkaline (pH 7.8); abrupt wavy boundary.

Ap2—3 to 6 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium and weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few medium and many fine and very fine roots; few fine and very fine tubular pores and many fine and very fine interstitial pores; mildly alkaline (pH 7.8); abrupt wavy boundary.

A13—6 to 16 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; weak medium and weak fine subangular blocky structure; soft, friable, slightly sticky, and slightly plastic; many fine and very fine roots; many fine and very fine tubular pores; moderately alkaline (pH 8.0); gradual smooth boundary.

A14—16 to 28 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and very fine roots; many fine and very fine tubular pores; moderately alkaline (pH 8.0); gradual smooth boundary.

B2—28 to 41 inches; grayish brown (10YR 5/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; few hard cicada nodules; moderately alkaline (pH 8.2); clear smooth boundary.

Cca—41 to 65 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few fine and very fine roots; few very fine tubular pores; moderately calcareous; few fine lime splotches and veins; moderately alkaline (pH 8.4).

The thickness of the solum and the depth to the moderately calcareous C horizon range from 25 to 43 inches. Reaction ranges from mildly to moderately alkaline.

The A horizon is grayish brown or brown. The B horizon is grayish brown or pale brown. The C horizon is light brownish gray or pale brown. It is silt loam that is less than 18 percent clay throughout. It contains a few hard cicada nodules.

Lanoak series

The Lanoak series consists of very deep, well drained soils that formed in thick loess on hills and ridges. Slopes are 0 to 45 percent. The mean annual precipitation is about 16 inches. The mean annual soil temperature is about 45 degrees F.

Lanoak soils are similar to Kucera, Ricrest, and Rexburg soils. They are near Ridgecrest, Hondoho, Newdale, and Wahtigup soils. Kucera soils are less than 18 percent clay in the profile. Ricrest soils average more than 15 percent particles coarser than very fine sand in the profile. Rexburg, Newdale, and Wahtigup soils have a mollic epipedon less than 20 inches thick. Ridgecrest and Hondoho soils are more than 35 percent coarse fragments in the control section.

Typical pedon of Lanoak silt loam, 4 to 12 percent slopes, about 4 miles south of Pauline, SW1/4NW1/4 sec. 35 T. 10 S., R. 33 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many fine and very fine interstitial pores; mildly alkaline (pH 7.6); gradual smooth boundary.

A12—8 to 20 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 32) moist; weak medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many fine and very fine tubular pores; mildly alkaline (pH 7.6); gradual smooth boundary.

B21t—20 to 26 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky, and plastic; few thin clay films on faces of peds; common fine and medium roots; many very fine and fine tubular pores; mildly alkaline (pH 7.6); gradual smooth boundary.

B22t—26 to 45 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, sticky, and plastic; few thin clay films on faces of peds; common fine and medium roots; many fine and very fine and fine tubular pores; mildly alkaline (pH 7.6); gradual smooth boundary.

C1ca—45 to 53 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many fine and very fine tubular pores; moderately calcareous; mildly alkaline (pH 7.8); gradual smooth boundary.

C2ca—53 to 60 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; common fine and very fine tubular pores; moderately calcareous; mildly alkaline (pH 7.6).

The thickness of the solum and the depth to the Cca horizon range from 43 to 55 inches.

The Ap and A1 horizons to a depth of 20 inches or more are grayish brown or dark grayish brown. The B2t horizon is grayish brown or brown. The C horizon is light brownish gray or pale brown. The texture throughout the profile is silt loam with a slight increase in clay content in the B2t horizon. The control section averages 18 to 27 percent clay.

Manila series

The Manila series consists of very deep, well drained soils that formed in alluvium derived mainly from sedimentary rocks. These soils are on valley fill bordered by faulted mountain ridges. Slopes are 4 to 20 percent. The mean annual precipitation is about 20 inches. The mean annual soil temperature is about 42 degrees F.

Manila soils are similar to Dranyon and Lanoak soils. They are near Hondoho, Hymas, Moohoo, Pavohroo, Ricrest, Ridgecrest, and Wahtigup soils. All are less than 35 percent clay in the control section.

Typical pedon of Manila loam in an area of Manila-Dranyon association, hilly, about 1 mile north of the Oneida County line, SE1/4SW1/4 sec. 26, T. 10 S., R. 34 E.

A1—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine

and very fine roots; many very fine interstitial pores;; slightly acid (pH 6.4); clear smooth boundary.

B11t—7 to 12 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky, and plastic; many very fine and few coarse roots; many very fine tubular pores; neutral (pH 6.6); clear smooth boundary.

B12t—12 to 19 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium and fine subangular blocky; slightly hard, firm, sticky, and plastic; common very fine roots; many very fine tubular pores; few thin clay films; neutral (pH 6.6); clear smooth boundary.

B21t—19 to 34 inches; yellowish brown (10YR 5/4) silty clay, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, very firm, very sticky, and very plastic; common very fine roots; common very fine tubular pores; moderately thick continuous clay films; neutral (pH 6.8); diffuse smooth boundary.

B22t—34 to 55 inches; yellowish brown (10YR 5/4) silty clay, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate angular blocky; hard, firm, sticky, and plastic; few very fine roots; common very fine pores; moderately thick continuous clay films; mildly alkaline (pH 7.8); abrupt smooth boundary.

B3tca—55 to 60 inches; pink (7.5YR 7/4) silty clay, light brown (7.5YR 6/4) moist; massive; very hard, very firm, very sticky and very plastic; many very fine tubular pores; thick continuous clay films; moderately alkaline (pH 8.0).

The solum is 39 to more than 60 inches thick. It is 0 to 5 percent coarse fragments.

The A1 horizon is dark grayish brown or very dark grayish brown. The B2 horizon is yellowish brown or brown.

McCarey series

The McCarey series consists of moderately deep, well drained soils that formed in loess and material weathered from basalt. These soils are on undulating basalt plains. Slopes are 0 to 12 percent. The mean annual precipitation is about 14 inches. The mean annual soil temperature is about 45 degrees F.

McCarey soils are similar to Neeley variant and Portino soils. They are near Portneuf, Tenno, and Trevino soils. Neeley variant and Portino soils are less than 18 percent clay and do not have a Bt horizon. Portneuf soils are deep silt loams. Tenno and Trevino soils are less than 20 inches deep to bedrock.

Typical pedon of McCarey loam in an area of McCarey-Rock outcrop complex, undulating, about 1 1/4 mile south of Mosby's Well, NW1/4 sec. 29, T. 4 S., R. 29 E.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate medium platy structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; common fine tubular pores; about 3 percent angular gravel and cobbles; mildly alkaline (pH 7.6); clear smooth boundary.

B21t—5 to 14 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; slightly hard, firm, sticky, and plastic; common fine and very fine roots; common fine tubular pores; few thin clay films on faces of peds and lining pores; about 3 percent angular gravel and cobbles; mildly alkaline (pH 7.6); diffuse smooth boundary.

B22t—14 to 22 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky, and plastic; few very fine roots; common fine tubular pores; few thin clay films on faces of peds and lining pores; about 3 percent angular gravel and cobbles; moderately alkaline (pH 8.0); clear smooth boundary.

Cca—22 to 35 inches; white (10YR 8/2) loam, pale brown (10YR 6/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky, and slightly plastic; few fine roots; few fine tubular pores; about 3 percent angular gravel and cobbles; very strongly calcareous; moderately alkaline (pH 8.2); abrupt irregular boundary.

R—35 inches; lime coated, fractured basalt bedrock.

The thickness of the solum ranges from 19 to 25 inches. The depth to bedrock ranges from 20 to 40 inches. The solum is 0 to 5 percent coarse fragments.

The A1 horizon is grayish brown or dark grayish brown. The B2t horizon is grayish brown or brown. It is clay loam or silty clay loam. The C horizon is pale brown, light gray, or white and is strongly or very strongly calcareous.

McDole series

The McDole series consists of very deep, well drained soils that formed in alluvium derived from loess. These soils are on bottom lands, alluvial fans, and low terraces. Slopes are 0 to 3 percent. The mean annual precipitation is about 12 inches. The mean annual soil temperature is about 50 degrees F.

McDole soils are similar to Ammon, Pocatello, and Parehat soils. They are near Pocatello, Parehat, Neeley, and Paniogue soils. Ammon soils have a mean annual soil temperature of about 45 degrees F. Pocatello soils

do not have a mollic epipedon. Parehat soils are somewhat poorly drained and have mottles at depths of 20 to 30 inches. Neeley soils are strongly calcareous at depths of 11 to 18 inches. Paniogue soils have stratified loamy sand and sand and gravel within 40 inches of the surface.

Typical pedon of McDole silt loam in an area of McDole-Parehat complex, 0 to 3 percent slopes, about 3 miles southeast of American Falls, NE1/4NE1/4 sec. 35, T. 7 S., R. 31 E.

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and medium roots; common fine and very fine interstitial pores; slightly calcareous; moderately alkaline (pH 8.2); gradual smooth boundary.

A12—6 to 12 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; common fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.2); gradual smooth boundary.

C1—12 to 18 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium granular structure; slightly hard, friable, slightly sticky, and slightly plastic; few medium and fine roots; common fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.3); clear smooth boundary.

C2—18 to 26 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.3); gradual smooth boundary.

C3—26 to 40 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.4); gradual smooth boundary.

C4—40 to 60 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; moderately calcareous; strongly alkaline (pH 8.5).

The A horizon is dominantly grayish brown. The C horizon is light brownish gray or light gray. It is silt loam containing much coarse silt, and it is less than 18 percent clay. The profile is slightly or moderately calcareous, but the upper few inches is noncalcareous in some pedons.

Mike series

The Mike series consists of shallow, well drained soils that formed in a thin mantle of loess over basalt bedrock. These soils are on dissected basalt plateaus. Slopes are 10 to 45 percent. The mean annual precipitation is about 12 inches. The mean annual soil temperature is about 44 degrees F.

Mike soils are similar to Tenno and Trevino soils. They are near Neeley, Neeley variant, and Newdale soils. Tenno soils do not have a mollic epipedon. Trevino soils have a mean annual soil temperature warmer than 47 degrees F. Neeley, Neeley variant, and Newdale soils are more than 20 inches deep.

Typical pedon of Mike extremely stony silt loam, steep, about 6 miles southwest of American Falls, SE1/4NW1/4 sec. 25, T. 8 S., R. 31 E.

A1—0 to 5 inches; brown (10YR 5/3) extremely stony silt loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky, and slightly plastic; many fine and very fine and common medium and coarse roots; common fine and very fine tubular pores; about 5 percent stones and 10 percent angular cobbles and gravel; moderately calcareous; mildly alkaline (pH 7.8); clear smooth boundary.

B2—5 to 12 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and very fine and common medium and coarse roots; many fine and very fine tubular pores; about 10 percent angular cobbles and gravel; moderately calcareous; moderately alkaline (pH 8.0); clear wavy boundary.

Cca—12 to 18 inches; white (10YR 8/2) loam, pale brown (10YR 6/3) moist; massive; hard, friable, slightly sticky, and slightly plastic; many fine and very fine and common medium roots; many fine and very fine tubular pores; about 15 percent stones, cobbles, and gravel; very strongly calcareous; moderately alkaline (pH 8.2); abrupt irregular boundary.

R—18 inches; fractured lime coated basalt.

Basalt bedrock is at 10 to 20 inches. The profile is 10 to 25 percent coarse fragments.

The A1 horizon is brown or grayish brown. It is extremely stony silt loam or loam. The B horizon is grayish brown or pale brown. It is loam or silt loam. The C horizon is white, light gray, or very pale brown. It is strongly or very strongly calcareous. Its upper boundary is between 8 and 14 inches.

Moohoo series

The Moohoo series consists of deep, well drained soils. These soils formed in colluvium and material weathered from quartzite or sandstone that in places has had additions of loess in the upper part. They are on mountain ridges and foot slopes. Slopes are 20 to 60 percent. The mean annual precipitation is about 20 inches. The mean annual soil temperature is about 40 degrees F.

Moohoo soils are similar to Pavohroo and Ricrest soils. They are near Dranyon, Hymas, Manila, Ridgecrest, and Wahtigup soils. Dranyon and Manila soils have a Bt horizon. Hymas soils are less than 20 inches deep to limestone bedrock, and Ridgecrest soils are less than 40 inches deep to limestone bedrock. Pavohroo and Ricrest soils have a calcareous C horizon. Wahtigup soils are calcareous throughout the profile.

Typical pedon of Moohoo gravelly loam in an area of Moohoo-Pavohroo complex, very steep, about 6 miles southeast of Pauline, SE1/4NW1/4 sec. 35, T. 10 S., R. 34 E.

O1—2 to 1 inch; partly decomposed needles, leaves, and twigs.

O2—1 inch to 0; decomposed needles, leaves, and twigs.

A1—0 to 16 inches; dark gray (10YR 4/1) gravelly loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky, and slightly plastic; many fine, medium, and coarse roots; common very fine tubular pores; about 20 percent angular gravel and cobbles; slightly acid (pH 6.5); clear wavy boundary.

C1—16 to 30 inches; light brownish gray (10YR 6/2) very gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and nonplastic; many fine and medium and common coarse roots; many very fine tubular pores; about 40 percent angular gravel and cobbles; slightly acid (pH 6.5); abrupt irregular boundary.

C2—30 to 56 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and nonplastic; common fine and medium roots; common fine tubular pores; about 50 percent angular gravel and cobbles; slightly acid (pH 6.5); abrupt irregular boundary.

R—56 inches; sandstone bedrock.

The A horizon is 7 to 16 inches thick. Reaction ranges from strongly acid through slightly acid.

The A horizon is dark gray or dark grayish brown. The C horizon is light brownish gray, light yellowish brown, or brown. Quartzite or sandstone bedrock commonly occurs at depths between 40 and 60 inches.

Neeley series

The Neeley series consists of very deep, well drained soils that formed in thick loess deposited on hills and terraces. Slopes are 0 to 30 percent. The mean annual precipitation is about 12 inches. The mean annual soil temperature is about 50 degrees F.

Neeley soils are similar to Neeley variant, Newdale, and Pocatello soils. They are near Kucera, Portino, Portneuf, Trevino, and Wheeler soils. Neeley variant, Portino, and Trevino soils have basalt bedrock within a depth of 40 inches. Kucera and Newdale soils have a mean annual soil temperature of 45 degrees F. Pocatello and Wheeler soils do not have a B horizon and are calcareous throughout. Portneuf soils have an umbric epipedon and are calcareous at the surface or within 7 inches of the surface.

Typical pedon of Neeley silt loam, 4 to 8 percent slopes, about 2 miles southeast of American Falls, NW1/4NW1/4 sec. 4, T. 8 S., R. 31 E.

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam; dark brown (10YR 3/3) moist; weak medium and fine granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine tubular pores; moderately alkaline (pH 8.0); gradual, smooth boundary.

A12—6 to 10 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; weak medium and fine granular structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and medium roots; many fine and very fine tubular pores; moderately alkaline (pH 8.0); gradual smooth boundary.

B2—10 to 16 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and medium roots; many very fine and fine tubular pores; moderately alkaline (pH 8.2); clear wavy boundary.

C1ca—16 to 45 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and medium roots; many very fine tubular pores; common hard firm nodules (cicada krotovinas) of soil material; strongly calcareous; common lime veins and splotches; strongly alkaline (pH 8.8); gradual smooth boundary.

C2ca—45 to 60 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few fine and medium roots; many very fine and fine tubular pores; moderately calcareous; strongly alkaline (pH 8.6).

The thickness of the solum and depth to the Cca horizon range from 11 to 20 inches. Reaction ranges from mildly to strongly alkaline.

If mixed to a depth of at least 7 inches, the Ap or A1 horizon is grayish brown or dark grayish brown. The B horizon is light brownish gray, grayish brown, or pale brown. The C horizon is light gray, light brownish gray, or pale brown.

Neeley variant

The Neeley variant consists of moderately deep, well drained soils that formed in loess deposited on an undulating basalt plain. Slopes are 0 to 12 percent. The mean annual precipitation is about 12 inches. The mean annual soil temperature is about 50 degrees F.

Neeley variant soils are similar to Neeley, Newdale, Pocatello, and Portino soils. They are near Portneuf and Trevino soils. Neeley, Newdale, Pocatello, and Portneuf soils do not have basalt bedrock within a depth of 40 inches. Portino soils have a light brownish gray and pale brown A horizon. Trevino soils have basalt bedrock at depths of 10 to 20 inches.

Typical pedon of Neeley variant silt loam in an area of Neeley-Neeley Variant complex, 4 to 8 percent slopes, 10 miles west of American Falls, SW1/4NE1/4 sec. 27, T. 7 S., R. 29 E.

Ap—0 to 7 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, friable, slightly sticky, and slightly plastic; common fine and medium roots; many fine and very fine interstitial pores; noncalcareous; moderately alkaline (pH 7.8); gradual smooth boundary.

B2—7 to 17 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine tubular pores; slightly calcareous; moderately alkaline (pH 7.8); gradual smooth boundary.

Cca—17 to 36 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky, and slightly plastic; common fine and medium roots; common very fine and fine tubular pores; strongly calcareous; moderately alkaline (pH 7.8); abrupt wavy boundary.

R—36 inches; basalt bedrock, lime coated on upper boundary; continues to an undetermined depth.

The solum is 14 to 20 inches thick. Reaction ranges from mildly to moderately alkaline.

The organic matter content of the A horizon is 1 to 2 percent. The B horizon is noncalcareous to slightly calcareous. The C horizon is light brownish gray or light gray. It overlies basalt bedrock, which is at depths of 20 to 40 inches.

Newdale series

The Newdale series consists of very deep, well drained soils that formed in thick loess. These soils are on loessal plains. Slopes are 0 to 30 percent. The mean annual precipitation is about 12 inches. The mean annual soil temperature is about 45 degrees F.

Newdale soils are similar to Neeley, Lanoak, and Rexburg soils. They are near Ammon, Arbone, Hondoho, and Wheelerville soils. Neeley soils have a mean annual soil temperature of about 50 degrees F and a growing season of 100 to 140 days. Lanoak soils have a Bt horizon and average 18 to 27 percent clay. Rexburg soils are strongly calcareous at depths of 18 to 35 inches. Ammon soils are moderately calcareous throughout. Arbone soils are more than 15 percent particles coarser than very fine sand. Hondoho soils are more than 35 percent rock fragments. Wheelerville soils have a light brownish gray A horizon, are moderately calcareous throughout, and are more than 20 percent lime coated krotovinas (cicada nodules).

Typical pedon of Newdale silt loam, 4 to 12 percent slopes, about 17 miles southwest of Pocatello, NW1/4SW1/4 sec. 4, T. 9 S., R. 34 E.

Ap1—0 to 4 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure and weak medium subangular blocky; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular and interstitial pores; mildly alkaline (pH 7.4); abrupt wavy boundary.

Ap2—4 to 11 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; common fine and very fine tubular and interstitial pores; mildly alkaline (pH 7.6); abrupt wavy boundary.

C1ca—11 to 22 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.0); clear wavy boundary.

C2ca—22 to 31 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; very strongly calcareous; few hard cicada nodules; moderately alkaline (pH 8.2); clear smooth boundary.

C3ca—31 to 47 inches; white (10YR 8/1) silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, fri-

able, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; very strongly calcareous; common hard nodules; moderately alkaline (pH 8.2); clear smooth boundary.

C4ca—47 to 71 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky, and slightly plastic; few very fine roots; many fine and very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.4).

The solum is 10 to 15 inches thick. Reaction ranges from mildly to moderately alkaline.

The A horizon is grayish brown or brown. Many pedons, particularly where the soil is not cultivated, have a grayish brown or brown weak B horizon. The dominant texture is silt loam. The C horizon is less than 20 percent hard lime coated krotovinas (cicada nodules). The depth to the strongly calcareous layers is 10 to 15 inches.

Paniogue series

The Paniogue series consists of very deep, well drained soils. These soils formed in mixed alluvium that has had additions of windblown material in the upper part. They are on alluvial terraces and fans. Slopes are 0 to 12 percent. The mean annual precipitation is about 9 inches. The mean annual soil temperature is about 50 degrees F.

In most places in the survey area, these soils are strongly calcareous throughout and thus are outside the range defined for the series. This difference does not alter their use or behavior.

Paniogue soils are similar to Escalante, Declo, and Portneuf soils. They are near Kecko, Clems, and Feltham soils. Escalante, Declo, Portneuf, Kecko, and Clems soils do not have loose sand and gravel within a depth of 40 inches. Feltham soils have a coarse textured control section.

Typical pedon of Paniogue loam, 2 to 4 percent slopes, about 2 miles northeast of Seagull Bay, NE1/4SE1/4 sec. 31, T. 6 S., R. 32 E.

Ap1—0 to 2 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; weak medium platy structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and very fine roots; many fine and very fine tubular and interstitial pores; strongly calcareous; moderately alkaline (pH 8.2); abrupt smooth boundary.

Ap2—2 to 13 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky, and slightly plastic; common very fine roots; common fine and very fine tubular and interstitial pores; strongly calcareous; moderately alkaline (pH 8.2); abrupt wavy boundary.

B2—13 to 27 inches; light gray (10YR 7/2) loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common very fine roots; many very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.4); diffuse smooth boundary.

B3—27 to 34 inches; light gray (10YR 7/2) loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.2); clear wavy boundary.

IIC1—34 to 37 inches; very pale brown (10YR 7/3) loamy sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky, and nonplastic; many fine and very fine interstitial pores; strongly calcareous; mildly alkaline (pH 7.8); clear wavy boundary.

IIIC2—37 to 60 inches; multicolored sand and gravel; single grain; loose; noncalcareous; mildly alkaline (pH 7.8).

The A horizon is grayish brown or light brownish gray loam or sandy loam. The B horizon is light gray or light brownish gray. Loose sand and gravel is within 40 inches of the surface.

Parehat series

The Parehat series consists of very deep, somewhat poorly drained soils that formed in alluvium derived mainly from loess. These soils are on bottom lands, alluvial fans, and low terraces. Slopes are 0 to 3 percent. The mean annual precipitation is about 12 inches. The mean annual soil temperature is about 50 degrees F.

Parehat soils are similar to Zunhall soils. They are near McDole, Pocatello, Neeley, and Paniogue soils. Zunhall soils have a mean annual soil temperature of about 45 degrees F. McDole, Pocatello, Neeley, and Paniogue soils are well drained and do not have mottles.

Typical pedon of Parehat silt loam in an area of McDole-Parehat complex, 0 to 3 percent slopes, about 5 miles northeast of American Falls, SE1/4SE1/4 sec. 12, T. 7 S., R. 31 E.

Ap—0 to 5 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to weak fine subangular blocky; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; common fine and very fine tubular and interstitial pores; moderately calcareous; moderately alkaline (pH 8.2); abrupt wavy boundary.

A12—5 to 10 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; few fine and very fine roots; common fine and very fine

tubular pores; moderately calcareous; moderately alkaline (pH 8.4); abrupt wavy boundary.

C1—10 to 16 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; hard, firm, slightly sticky, and slightly plastic; few fine and very fine roots; few fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.4); abrupt wavy boundary.

C2—16 to 23 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; hard, firm, slightly sticky and slightly plastic; few fine and very fine roots; few fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.4); clear smooth boundary.

C3—23 to 33 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; few fine faint mottles; massive; slightly hard, firm, slightly sticky, and slightly plastic; few fine and very fine roots; few fine and very fine tubular pores; moderately calcareous; few fine lime splotches and veins; moderately alkaline (pH 8.4); clear smooth boundary.

C4—33 to 41 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; common medium distinct mottles; massive; slightly hard, firm, slightly sticky, and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.4); clear smooth boundary.

C5—41 to 60 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; common medium distinct mottles; massive; slightly hard, firm, slightly sticky, and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; moderately calcareous; strongly alkaline (pH 8.6).

These soils have a fluctuating water table at 20 to 48 inches in spring and early in summer. Mottles occur at a depth of 20 to 30 inches.

Pavohroo series

The Pavohroo series consists of deep, well drained soils. These soils formed in colluvium and material weathered from limestone that has had additions of loess in the upper part. They are on mountain ridges and foot slopes. Slopes are 20 to 60 percent. The mean annual precipitation is about 20 inches. The mean annual soil temperature is about 40 degrees F.

Pavohroo soils are similar to Moohoo and Ricrest soils. They are near Dranyon, Hymas, Manila, Ridgecrest, and Wahtigup soils. Dranyon and Manila soils have a Bt horizon. Hymas and Ridgecrest soils are less than 20 and 40 inches deep, respectively, to limestone bedrock. Moohoo soils do not have a B horizon and are noncalcareous throughout. Ricrest soils do not have an O horizon and have a strongly calcareous C horizon. Wahtigup soils are calcareous throughout the profile.

Typical pedon of Pavohroo stony loam in an area of Moohoo-Pavohroo complex, very steep, about 8 miles west of Arbon, SW1/4SW1/4 sec. 16, T. 11 S., R. 32 E.

O1—1 inch to 0; slightly decomposed pine needles and leaves.

A11—0 to 8 inches; dark grayish brown (10YR 4/2) stony loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate fine and very fine granular; soft, very friable, slightly sticky, and slightly plastic; many fine and medium roots; many very fine and fine tubular pores; about 5 percent stones, cobbles, and gravel; slightly acid (pH 6.4); clear wavy boundary.

A12—8 to 14 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to weak medium and fine granular; slightly hard, friable, slightly sticky, and slightly plastic; many fine and medium roots; many very fine and fine tubular pores; about 5 percent stones, cobbles, and gravel; slightly acid (pH 6.4); abrupt smooth boundary.

B1—14 to 20 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky, and plastic; many fine, medium, and coarse roots; many very fine and fine tubular pores; about 5 percent stones, cobbles, and gravel; slightly acid (pH 6.4); clear wavy boundary.

B2—20 to 28 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; moderate fine and medium angular blocky structure; slightly hard, friable, sticky, and plastic; many fine, medium, and coarse roots; many very fine and fine tubular pores; about 10 percent stones, cobbles, and gravel; slightly acid (pH 6.5); clear wavy boundary.

B3—28 to 38 inches; pale brown (10YR 6/3) loam, grayish brown (10YR 5/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine, medium, and coarse roots; many fine and very fine tubular pores; about 15 percent stones, cobbles, and gravel; neutral (pH 6.6); abrupt wavy boundary.

C—38 to 48 inches; pale brown (10YR 6/3) stony loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine, medium, and coarse roots; many very fine and fine tubular pores; about 25 percent stones, cobbles, and gravel; slightly calcareous; mildly alkaline (pH 7.6); abrupt wavy boundary.

R—48 inches; fractured limestone bedrock.

The thickness of the mollic epipedon ranges from 16 to 22 inches and that of the solum from 30 to 45 inches. The solum is 5 to 15 percent rock fragments.

The A1 horizon is dark grayish brown or dark gray. It is stony loam and loam. The B horizon is brown, pale brown, grayish brown. It is loam or clay loam. The C horizon is pale brown or brown and is slightly or moderately calcareous. Limestone bedrock is below a depth of 40 inches but commonly above 60 inches.

Pocatello series

The Pocatello series consists of very deep, well drained soils that formed in thick loess. These soils are on hills and terraces. Slopes are 0 to 30 percent. The mean annual precipitation is about 11 inches. The mean annual soil temperature is about 50 degrees F.

Pocatello soils are similar to Neeley, Portneuf, and Wheeler soils. They are near Newdale, Portino, and Wheelerville soils. Neeley soils have a B2 horizon and a strongly calcareous Cca horizon. Portneuf soils have a strongly calcareous C horizon that is more than 15 percent hard lime coated krotovinas (cicada nodules). Wheeler soils are strongly calcareous throughout and do not have a Cca horizon. Portino soils are 20 to 40 inches deep to basalt bedrock. Newdale and Wheelerville soils have a mean annual soil temperature of about 45 degrees F.

Typical pedon of Pocatello silt loam, 4 to 12 percent slopes, about 8 miles southwest of American Falls, NW1/4SW1/4 sec. 28, T. 8 S., R. 30 E.

Ap—0 to 6 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; soft, friable, slightly sticky, and slightly plastic; many fine and medium roots; many very fine and fine interstitial pores; slightly calcareous; moderately alkaline (pH 8.4); clear smooth boundary.

C1—6 to 16 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; very weak medium and fine subangular blocky structure; soft, friable, slightly sticky, and slightly plastic; few fine and medium roots; many very fine and fine tubular pores; moderately calcareous; moderately alkaline (pH 8.4); clear wavy boundary

C2ca—16 to 27 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; very few fine and medium roots; common very fine and fine tubular pores; moderately calcareous; many lime veins and splotches; strongly alkaline (pH 8.6); gradual wavy boundary.

C3ca—27 to 50 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; moderately calcareous; many lime veins and splotches; strongly alkaline (pH 8.6); gradual wavy boundary.

C4ca—50 to 60 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; very few fine and medium roots; common very fine and fine tubular pores; moderately calcareous; many lime veins and splotches; strongly alkaline (pH 8.6).

The A horizon is dominantly light brownish gray or pale brown. It is silt loam that has much coarse silt and is less than 18 percent clay. Moderately calcareous layers that are less than 15 percent cicada nodules are below depths of 6 to 20 inches. Reaction ranges from moderately alkaline in the upper part to strongly and very strongly alkaline in the lower part. Saline-alkali layers are in some pedons.

Portino series

The Portino series consists of moderately deep, well drained soils that formed in a loess mantle on basalt plains. Slopes are 0 to 12 percent. The mean annual precipitation is about 9 inches. The mean annual soil temperature is about 50 degrees F.

Portino soils are similar to Portneuf and Trevino soils. They are near McCarey, Quincy, and Vining soils. Portneuf soils are more than 40 inches deep. Trevino soils are less than 20 inches deep. McCarey soils have a Bt horizon. Quincy soils are more than 60 inches deep and are fine sand and loamy fine sand throughout. Vining soils are fine sandy loam throughout.

Typical pedon of Portino silt loam, 2 to 4 percent slopes, about 11 miles northwest of American Falls, NE1/4NE1/4 sec. 24, T. 6 S., R. 29 E.

Ap—0 to 6 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine interstitial pores; slightly calcareous; moderately alkaline (pH 8.2); gradual smooth boundary.

A12—6 to 12 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine interstitial pores; moderately calcareous; moderately alkaline (pH 8.2); clear wavy boundary.

C1ca—12 to 19 inches; white (10YR 8/2) silt loam, light gray (10YR 7/2) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine tubular pores; strongly cal-

careous; moderately alkaline (pH 8.4); gradual smooth boundary.

C2a—19 to 24 inches; white (10YR 8/2) silt loam, light brownish gray (10YR 6/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine tubular pores; strongly calcareous; moderately alkaline (pH 8.2); gradual smooth boundary.

C3ca—24 to 34 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slighty sticky and slightly plastic; common fine and medium roots; many very fine and fine interstitial pores; strongly calcareous; moderately alkaline (pH 8.2); abrupt wavy boundary.

IIR—34 inches; black (10YR 2/1) basalt bedrock with medium coating of calcium carbonate on surface and in cracks.

The solum is 4 to 15 inches thick. Reaction ranges from mildly to moderately alkaline.

The A horizon is light brownish gray or pale brown. It is silt loam or stony loam. Some pedons have a light brownish gray or pale brown weakly developed B horizon. The C horizon is light gray or white. The depth to the strongly calcareous layers ranges from 4 to 15 inches. Basalt bedrock is at a depth of 20 to 40 inches.

Portneuf series

The Portneuf series consists of deep, well drained soils that formed in loess on undulating basalt plains. Slopes are 0 to 8 percent. The mean annual precipitation is about 10 inches. The mean annual soil temperature is about 50 degrees F.

Portneuf soils are similar to Pocatello, Neeley variant, Wheeler, and Portino soils. They are near Pocatello, Neeley, Neeley variant, Portino, Trevino, and Wheeler soils. Pocatello soils are less than 15 percent hard lime coated krotovinas (cicada nodules). Neeley variant and Portino soils have basalt bedrock at 20 to 40 inches. Wheeler soils are strongly calcareous throughout and are less than 15 percent hard lime coated krotovinas (cicada nodules). Trevino soils have basalt bedrock at a depth of less than 20 inches.

Typical pedon of Portneuf silt loam, bedrock substratum, 2 to 4 percent slopes, about 14 miles northwest of American Falls, SW1/4SW1/4 sec. 13, T. 6 S., R. 29 E.

Ap—0 to 6 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; soft, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine interstitial pores; slightly calcareous; mildly alkaline (pH 7.6); abrupt wavy boundary.

A12—6 to 9 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine interstitial pores; slightly calcareous; mildly alkaline (pH 7.6); gradual smooth boundary.

B2—9 to 15 inches; light brownish gray (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; slightly calcareous; mildly alkaline (pH 7.8); gradual wavy boundary.

C1ca—15 to 36 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; few fine and very fine roots; many fine and very fine tubular pores; common hard lime coated krotovinas (cicada nodules); strongly calcareous; moderately alkaline (pH 8.4); gradual wavy boundary.

C2—36 to 57 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; massive; soft, friable, slightly sticky, and slightly plastic; few fine and very fine roots; common fine and very fine interstitial pores; moderately calcareous; moderately alkaline (pH 8.2); abrupt wavy boundary.

IIR—57 inches; basalt bedrock, thin lime coatings on surfaces and in cracks.

The depth to strongly calcareous material is about 12 to 20 inches. Basalt bedrock generally occurs at depths of 40 to 60 inches but is more than 60 inches deep in some areas.

The soil is silt loam throughout. It is less than 18 percent clay and less than 15 percent material coarser than very fine sand. It is 15 to 30 percent hard lime coated krotovinas (cicada nodules) at depths of 12 to 20 inches.

Quincy series

The Quincy series consists of very deep, excessively drained and somewhat excessively drained soils that formed in thick deposits of sandy material of mixed origin. These soils are on basalt plains and terraces in the form of long, narrow ridges, hummocks, or dunes. Slopes range from 0 to 20 percent. The mean annual precipitation is about 9 inches. The mean annual soil temperature is about 50 degrees F.

Quincy soils are similar to the Feltham and Vining soils. They are near Clems, Kecko, Portneuf, Declo, Escalante, and Wapi soils. Wapi soils have basalt bedrock at a depth of less than 20 inches. Vining soils have bedrock at 20 to 40 inches. Feltham soils have textures finer than loamy fine sand below depths of 25 to 35 inches. Clems and Kecko soils have a B2 horizon. Portneuf and Declo soils have a strongly calcareous C hori-

zon and have textures finer than loamy fine sand. Escalante soils have a strongly calcareous C horizon at depths of 10 to 16 inches.

Typical pedon of Quincy fine sand, rolling, about 2 miles northeast of Quigley railroad siding, NW1/4NW1/4 sec. 3, T. 8 S., R. 29 E.

C1—0 to 10 inches; brown (10YR 5/3) fine sand, dark grayish brown (10YR 4/2) moist; single grain; loose; common fine and medium roots; many very fine interstitial pores; mildly alkaline (pH 7.4); gradual smooth boundary.

C2—10 to 60 inches; grayish brown (10YR 5/2) fine sand, dark grayish brown (10YR 4/2) moist; single grain; loose; common fine and medium roots; many very fine interstitial pores; mildly alkaline (pH 7.4).

The profile shows very little development. In most areas the upper 20 inches is noncalcareous, but some areas are slightly calcareous below 20 inches.

The profile is brown or grayish brown. It is commonly fine sand throughout, but some areas are loamy fine sand. The dark colors are mainly caused by the dark colored minerals in the eolian material.

Rexburg series

The Rexburg series consists of very deep, well drained soils that formed in thick loess on hills and ridges. Slopes are about 4 to 30 percent. The mean annual precipitation is about 14 inches. The mean annual soil temperature is about 45 degrees F.

Rexburg soils are similar to Newdale, Neeley, Lanoak, and Kucera soils. They are near Newdale, Lanoak, Arbone, Hondoho, and Wheelerville soils. Newdale soils have strongly calcareous material within 15 inches of the surface. Neeley soils have a mean annual soil temperature of about 50 degrees F. Lanoak and Kucera soils have a mollic epipedon that is 20 inches or more thick. Arbone soils are more than 15 percent material coarser than very fine sand. Hondoho soils are more than 35 percent coarse fragments. Wheelerville soils have an umbric epipedon and are calcareous throughout.

Typical pedon of Rexburg silt loam, 4 to 12 percent slopes, about 7 miles southeast of Rockland, SW1/4SW1/4 sec. 13, T. 10 S., R. 31 E.

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many fine and very fine interstitial pores; neutral (pH 7.2); gradual boundary.

A12—6 to 12 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many fine and very fine tubular pores; neutral (pH 7.2); gradual smooth boundary.

B2—12 to 23 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; common fine and very fine tubular pores; neutral (pH 7.2); abrupt wavy boundary.

C1ca—23 to 34 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 5/3) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; common fine and very fine tubular pores; strongly calcareous; mildly alkaline (pH 7.8); gradual wavy boundary.

C2ca—34 to 45 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; few fine and medium roots; common fine and very fine tubular pores; strongly calcareous; mildly alkaline (pH 7.8); gradual smooth boundary.

C3—45 to 60 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky, and slightly plastic; few fine and medium roots; many fine and very fine tubular pores; moderately calcareous; mildly alkaline (pH 7.6).

The A horizon is grayish brown or brown. The B horizon is light brownish gray or pale brown. The profile is less than 18 percent clay and less than 15 percent material coarser than very fine sand.

The mollic epipedon is 12 to 20 inches thick. The depth to strongly calcareous material is 18 to 34 inches.

Ricrest series

The Ricrest series consists of very deep, well drained soils. These soils formed in colluvium and material weathered from limestone that has had additions of loess. They are on mountain ridges and foot slopes. Slopes are 20 to 60 percent. The mean annual precipitation is about 18 inches. The mean annual soil temperature is about 45 degrees F.

Ricrest soils are similar to Ridgecrest, Moohoo, and Pavohroo soils. They are near Dranyon, Hymas, Manila, Ridgecrest, and Wahtigup soils. Dranyon and Manila soils have a Bt horizon. Hymas, Moohoo, and Ridgecrest soils are more than 35 percent rock fragments. Pavohroo soils have a mollic epipedon that is more than 16 inches thick and a slightly or moderately calcareous C horizon. Wahtigup soils do not have a B horizon and are calcareous throughout.

Typical pedon of Ricrest loam in an area of Ricrest-Ridgecrest complex, very steep, about 5.5 miles east of Rockland, SW1/4SE1/4 sec. 7, T. 10 S., R. 32 E.

A11—0 to 6 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky, and slightly plastic; many very fine and fine tubular pores; many fine and medium roots; mildly alkaline (pH 7.4); gradual smooth boundary.

A12—6 to 10 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate medium and coarse granular structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and medium roots; many very fine and fine tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

B21—10 to 18 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; hard, firm, sticky, and plastic; many fine and medium roots; many very fine and fine tubular pores; few pebbles; mildly alkaline (pH 7.6); gradual wavy boundary.

B22—18 to 24 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; hard, firm, sticky, and plastic; many fine and medium roots; many very fine and fine tubular pores; about 5 percent limestone gravel; mildly alkaline (pH 7.8); abrupt wavy boundary.

C1ca—24 to 38 inches; light brownish gray (10YR 6/2) gravelly loam, grayish brown (10YR 5/2) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; common fine and very fine tubular pores; about 20 percent limestone gravel; strongly calcareous; moderately alkaline (pH 8.0); gradual wavy boundary.

C2ca—38 to 62 inches; light gray (10YR 7/2) gravelly loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few fine and medium roots; many very fine and fine tubular pores; about 35 percent limestone gravel; strongly calcareous; moderately alkaline (pH 8.2).

The solum is 20 to 30 inches thick. It is 2 to 10 percent coarse fragments. The substratum is up to 35 percent coarse fragments.

The A1 horizon is very dark grayish brown or very dark gray. The B horizon is dark gray or dark grayish brown clay loam or light silty clay loam, The C horizon is light brownish gray, light gray, or pale brown. The depth to strongly calcareous material ranges from 20 to 30 inches.

Ridgecrest series

The Ridgecrest series consists of moderately deep, well drained soils. These soils formed dominantly in material that weathered from hard limestone and has had additions of loess or colluvium in the upper part. They are on mountain ridges. Slopes are 20 to 60 percent. The mean annual precipitation is about 15 inches. The mean annual soil temperature is about 45 degrees F.

Ridgecrest soils are similar to Ricrest soils. They are near Dranyon, Hondoho, Hymas, Moohoo, Pavohroo, and Wahtigup soils. All but the Hymas soils have bedrock at depths of more than 40 inches. Hymas soils have bedrock at less than 20 inches.

Typical pedon of Ridgecrest stony loam in an area of Ricrest-Ridgecrest complex, very steep, about 3 miles southeast of Pauline, SW1/4SE1/4 sec. 28, T. 10 S., R. 34 E.

A11—0 to 5 inches; brown (10YR 4/3) stony loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky, and slightly plastic; few medium and many fine and very fine roots; many very fine interstitial pores; few stones and 20 percent gravel and cobbles; slightly calcareous; mildly alkaline (pH 7.8); clear smooth boundary.

A12—5 to 9 inches; brown (10YR 4/3) stony loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky, and slightly plastic; few medium and many fine and very fine roots; many very fine interstitial pores; few stones and 25 percent gravel and cobbles; moderately calcareous; mildly alkaline (pH 7.8); clear wavy boundary.

C1ca—9 to 19 inches; brown (10YR 5/3) extremely stony loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; common medium and many fine and very fine roots; few very fine tubular and interstitial pores; about 35 percent stones and 50 percent gravel and cobbles; strongly calcareous; mildly alkaline (pH 7.8); clear wavy boundary.

C2ca—19 to 29 inches; brown (10YR 5/3) extremely stony loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few medium and common fine and very fine roots; few very fine tubular and interstitial pores; about 45 percent stones and 40 percent gravel and cobbles; strongly calcareous; moderately alkaline (pH 8.0); abrupt irregular boundary.

R—29 inches; dark gray limestone to an undetermined depth.

The soil depth is 20 to 40 inches. The A horizon is 20 to 35 percent rock fragments. The rock fragments increase significantly with depth. The dense hard limestone is impervious to roots and water except where fractured.

The A1 horizon is brown or grayish brown. The substratum is brown or pale brown.

Schodson series

The Schodson series consists of very deep, somewhat poorly drained soils that formed in alluvial and eolian sands. These soils are in old river channels. Slopes are 0 to 3 percent. The mean annual precipitation is about 9 inches. The mean annual soil temperature is about 50 degrees F.

Schodson soils are similar to Kecko soils. They are near Feltham, Quincy, Clems, Vining, and Wapi soils. Kecko, Feltham, Quincy, Clems, and Vining soils do not have mottles. Wapi soils are less than 20 inches deep over bedrock.

Typical pedon of Schodson fine sandy loam, 0 to 3 percent slopes, 2 miles south of Bonanza Lake, NE1/4NE1/4 sec. 5, T. 9 S., R. 29 E.

A1—0 to 6 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, friable, nonsticky, and slightly plastic; many medium, fine and very fine roots; many fine and very fine interstitial pores; moderately alkaline (pH 8.4); abrupt smooth boundary.

C1—6 to 16 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 3/4) moist; weak coarse and medium subangular blocky structure; soft, friable, nonsticky, and slightly plastic; few medium and many fine and very fine roots; many fine and very fine interstitial pores and few fine and very fine tubular pores; slightly calcareous; moderately alkaline (pH 8.4); clear smooth boundary.

C2—16 to 28 inches; brown (10YR 5/3) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; soft, friable, nonsticky, and slightly plastic; common medium and many fine and very fine roots; many fine and very fine interstitial pores and few fine and very fine tubular pores; slightly calcareous; moderately alkaline (pH 8.2); abrupt wavy boundary.

C3—28 to 34 inches; pale brown (10YR 6/3) fine sandy loam, yellowish brown (10YR 5/4) moist; few fine faint dark yellowish brown mottles; massive; soft, friable, nonsticky, and nonplastic; common medium and many fine and very fine roots; many fine and very fine interstitial pores; moderately alkaline (pH 8.0); clear wavy boundary.

IIC4—34 to 60 inches; pale brown (10YR 6/3) loamy fine sand, yellowish brown (10YR 5/4) moist; common coarse distinct dark yellowish brown mottles; massive; soft, very friable, nonsticky, and nonplastic; few coarse, common medium, and many fine and very fine roots; many fine and very fine interstitial pores; moderately alkaline (pH 8.0).

These soils have a fluctuating water table that reaches its maximum late in winter and early in spring.

The A1 horizon is brown or grayish brown. The upper part of the C horizon is brown, yellowish brown, or pale brown and is fine sandy loam. The IIC horizon is pale brown and is loamy fine sand. The average texture of the 10 to 40 inch control section is moderately coarse. Mottles are at depths of 28 to 34 inches and range from faint to distinct. They are dark yellowish brown or olive brown.

Sheege series

The Sheege series consists of shallow, well drained soils. These soils formed in colluvium and material that weathered from limestone and has had additions of loess in the upper part. They are on the upper parts of mountain ridges. Slopes are 20 to 60 percent. The mean annual precipitation is about 20 inches. The mean annual soil temperature is about 40 degrees F. The mean summer temperature is about 58 degrees F.

Sheege soils are similar to Hymas soils. They are near Moohoo, Pavohroo, Ricrest, and Ridgecrest soils. Hymas soils, which are at lower elevations, have a mean annual soil temperature of about 45 degrees F and a mean summer temperature of about 60 degrees F. Moohoo, Pavohroo, Ricrest, and Ridgecrest soils are all more than 20 inches deep over bedrock.

Typical pedon of Sheege extremely stony loam in an area of Sheege-Pavohroo association, very steep, about 6 miles northwest of Arbon, NE1/4SE1/4 sec. 2, T. 11 S., R. 32 E.

A1—0 to 6 inches; grayish brown (10YR 5/2) extremely stony loam, dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky, and slightly plastic; many fine and medium roots; many very fine and fine interstitial pores; 50 percent angular limestone fragments; slightly calcareous; mildly alkaline (pH 7.8); gradual wavy boundary.

C—6 to 17 inches; pale brown (10YR 6/3) very stony loam, grayish brown (10YR 5/2) moist; very weak fine subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; many fine and medium roots; many very fine and fine tubular pores; 50 percent angular limestone stones, cobbles, and gravel; strongly calcareous; moderately alkaline (pH 8.0); abrupt wavy boundary.

R—17 inches; dark gray limestone bedrock, somewhat fractured.

The solum is 6 to 10 inches thick. It is 35 to 90 percent rock fragments. The depth to limestone bedrock is 10 to 20 inches.

The A horizon is grayish brown or dark grayish brown. In some pedons it rests directly on limestone bedrock. The C horizon, where present, is pale brown or grayish brown.

Tenno series

The Tenno series consists of shallow, well drained soils that formed in a thin mantle of loess and the underlying material weathered from basalt on basalt plains. Slopes are 0 to 60 percent. The mean annual precipitation is about 10 inches. The mean annual soil temperature is about 45 degrees F.

Tenno soils are similar to Mike and Trevino soils. They are near Portino, Trevino, and McCarey soils. Mike soils have a mean annual precipitation of about 14 inches. Trevino soils have a mean annual soil temperature of about 50 degrees F. Portino soils are 20 to 40 inches deep over basalt bedrock and have a mean annual soil temperature of about 50 degrees F. McCarey soils are 20 to 40 inches deep over basalt bedrock and have an argillic horizon.

Typical pedon of Tenno very stony loam in an area of Rock outcrop-Tenno complex, rolling, about 3 miles north of Mosby's Well, SW1/4NW1/4 sec. 5, T. 4 S., R. 29 E.

A11—0 to 3 inches; brown (10YR 3/3) (pale brown 10YR 6/3, crushed) very stony loam, dark brown (10YR 3/3) (dark grayish brown 10YR 4/2, crushed) moist; weak medium platy structure and weak fine granular; soft, very friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine vesicular pores; about 5 percent stones, cobbles, and gravel; mildly alkaline (pH 7.6); clear smooth boundary.

A12—3 to 8 inches; brown (10YR 5/3) (pale brown 10YR 6/3, crushed) very stony loam, dark brown (10YR 3/3) (dark grayish brown 10YR 4/2, crushed) moist; weak thick platy structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; common fine and very fine vesicular pores; about 5 percent stones, cobbles, and gravel; mildly alkaline (pH 7.6); clear smooth boundary.

B2—8 to 14 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky, and slightly plastic; few fine roots; few very fine tubular pores; about 10 percent stones, cobbles, and gravel; mildly alkaline (pH 7.6); clear irregular boundary.

Cca—14 to 17 inches; light brownish gray (10YR 6/2) stony loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; hard, firm, slightly sticky, and slightly plastic; few medium and fine roots; few very fine tubular pores; about 25 percent stones, cobbles, and gravel; moderately calcareous; moderately alkaline (pH 8.0); abrupt irregular boundary.

R—17 inches; fractured lime coated basalt bedrock.

Basalt bedrock is at a depth ranging from 10 to 20 inches. The profile is less than 35 percent rock fragments.

The C horizon is light brownish gray or pale brown and is moderately or strongly calcareous.

Trevino series

The Trevino series consists of shallow, well drained soils that formed in a thin mantle of loess on basalt plains. Slopes are 0 to 20 percent. The mean annual precipitation is about 9 inches. The mean annual soil temperature is about 50 degrees F.

Trevino soils are similar to Mike, Portino, and Tenno soils. They are near McCarey, Portneuf, Quincy, and Vining soils. McCarey, Portino, Portneuf, Quincy, and Vining soils are more than 20 inches deep. Mike and Tenno soils have a mean annual soil temperature of about 44 degrees F.

Typical pedon of Trevino stony loam in an area of Trevino-Portino-Rock outcrop complex, rolling, about 8 miles north of Quigley, NE1/4NE1/4 sec. 6, T. 7 S., R. 29 E.

A1—0 to 6 inches; light brownish gray (10YR 6/2) stony loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine interstitial pores; about 10 percent angular stones and cobbles; noncalcareous; neutral (pH 7.2); gradual smooth boundary.

B2—6 to 12 inches; light brownish gray (10YR 6/2) stony loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine interstitial pores; about 15 percent angular stones; noncalcareous except for few strongly calcareous specks; mildly alkaline (pH 7.4); gradual wavy boundary.

C1ca—12 to 16 inches; light gray (10YR 7/2) stony loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; common fine and medium roots; common very fine and fine tubular pores; about 15 percent angular stones; moderately calcareous; moderately alkaline (pH 8.2); gradual smooth boundary.

C2ca—16 to 19 inches; light gray (10YR 7.2) stony loam, grayish brown (10YR 5/2) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; few fine and medium roots; common very fine and fine tubular pores; about 15 percent angular stones; moderately calcareous; moderately alkaline (pH 8.4); abrupt wavy boundary.

IIR—19 inches; black basalt bedrock; thick coating of calcium carbonate on surface and in cracks and pores of rock.

The soil depth is 10 to 20 inches. The profile is 5 to 20 percent coarse fragments.

The A1 and B2 horizons are light brownish gray or pale brown. The C horizon is light gray, very pale brown, or white. The depth to calcium carbonates dominantly ranges from 8 to 13 inches.

Vining series

The Vining series consists of moderately deep, well drained soils that formed in eolian materials of mixed origin over basalt bedrock. These soils are on basalt plains. Slopes are 0 to 12 percent. The mean annual precipitation is about 10 inches. The mean annual soil temperature is about 49 degrees F.

Vining soils are similar to Clems and Kecko soils. They are near Portino, Quincy, Trevino, and Wapi soils. Clems, Kecko, and Quincy soils are more than 40 inches deep. Portino soils are silt loam and loam. Trevino and Wapi soils are less than 20 inches deep.

Typical pedon of Vining fine sandy loam in an area of Vining-Wapi-Rock outcrop complex, rolling, about 2 1/2 miles north of Minidoka Migratory Waterfowl Refuge, SE1/4NE1/4 sec. 6, T. 9 S., R. 28 E.

A1—0 to 5 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky, and slightly plastic; many very fine and fine roots; many fine interstitial pores; neutral (pH 6.6); clear smooth boundary.

B2—5 to 13 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; slightly hard, very friable, slightly sticky, and slightly plastic; many fine and very fine roots; common very fine tubular pores; neutral (pH 6.6); diffuse smooth boundary.

C—13 to 25 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium and fine subangular blocky structure; slightly hard, very friable, slightly sticky, and slightly plastic; common very fine and fine roots; common very fine tubular pores; neutral (pH 6.8); abrupt irregular boundary.

R—25 inches; basalt bedrock; variable amounts of lime coating on surface and in pores.

The solum is 11 to 16 inches thick. It is 0 to 10 percent coarse fragments. Reaction ranges from neutral to mildly alkaline.

The A horizon is brown or grayish brown. The weak B horizon is brown or grayish brown. The C horizon is light brownish gray or grayish brown.

Wahtigup series

The Wahtigup series consists of very deep, well drained soils. These soils formed in colluvium and local alluvium that has had additions of loess in the upper part. They are on mountain foot slopes, upland ridges, and alluvial and colluvial fans. Slopes are 0 to 60 percent. The mean annual precipitation is about 15 inches. The mean annual soil temperature is about 45 degrees F.

Wahtigup soils are similar to Hondoho, Ricrest, and Ridgecrest soils. They are near Hymas, Moohoo, Newdale, Pavohroo, Rexburg, and Wheelerville soils. Hondoho and Moohoo soils are more than 35 percent rock fragments. Hymas soils have limestone bedrock at depths of 10 to 20 inches. Newdale and Rexburg soils have a B horizon and are silt loam throughout. Pavohroo and Ricrest soils have a mollic epipedon. The solum of Pavohroo soils is 30 to 45 inches thick, and that of Ricrest soils is 20 to 30 inches thick. Ridgecrest soils are more than 35 percent rock fragments and have limestone bedrock at depths between 20 and 40 inches. Wheelerville soils are moderately calcareous and are silt loam throughout.

Typical pedon of Wahtigup gravelly loam in an area of Wahtigup-Hondoho complex, steep, about 8 miles south of American Falls, NW1/4NW1/4 sec. 34, T. 8 S., R. 31 E.

A11—0 to 5 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to weak medium and fine granular; slightly hard, friable, slightly sticky, and slightly plastic; many fine and medium roots; many interstitial pores; about 25 percent angular gravel and cobbles; moderately calcareous; mildly alkaline (pH 7.6); gradual smooth boundary.

A12—5 to 12 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine granular structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and medium roots; many interstitial pores; about 20 percent angular gravel and cobbles; moderately calcareous; mildly alkaline (pH 7.8); gradual smooth boundary.

C1—12 to 24 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; many fine and medium roots; many very fine and fine tubular pores; about 15 percent gravel, cobbles, and stones; strongly calcareous; moderately alkaline (pH 8.2); gradual smooth boundary.

C2—24 to 30 inches; light gray (10YR 7/2) stony loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine tubular

pores; about 30 percent angular stones, cobbles, and gravel; strongly calcareous; moderately alkaline (pH 8.2); gradual smooth boundary.

C3—30 to 60 inches; light gray (10YR 7.2) stony loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; common fine and medium roots; many very fine and fine tubular pores; about 30 percent angular stones, cobbles, and gravel; strongly calcareous; moderately alkaline (pH 8.4).

From 10 to 40 inches, the profile is gravelly or stony loam and averages 15 to 35 percent rock fragments. Reaction ranges from mildly to moderately alkaline.

The A horizon is grayish brown or dark grayish brown. The C horizon is light gray or light brownish gray gravelly or stony loam. Limestone is generally at depths of more than 60 inches.

Wapi series

The Wapi series consists of shallow, excessively drained soils that formed in eolian sands over basalt. These soils are on basalt uplands. Slopes are 0 to 20 percent. The mean annual precipitation is about 8 inches. The mean annual soil temperature is about 50 degrees F.

Wapi soils are similar to Vining soils. They are near Clems, Feltham, Kecko, and Quincy soils. All of those soils are deeper than 20 inches.

Typical pedon of Wapi loamy fine sand in an area of Vining-Wapi-Rock outcrop complex, undulating, about 1 mile northeast of Bonanza Lake, SW1/4NE1/4 sec. 15, T. 8 S., R. 29 E.

A1—0 to 5 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; weak fine subangular blocky structure parting to weak fine granular; soft, very friable, nonsticky, and nonplastic; few medium and many fine and very fine roots; many fine interstitial pores; mildly alkaline (pH 7.4); abrupt smooth boundary.

C1—5 to 10 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, and nonplastic; few medium and common fine and very fine roots; many fine interstitial pores; mildly alkaline (pH 7.4); clear smooth boundary.

C2—10 to 16 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, and nonplastic; common fine and very fine roots; many fine interstitial pores; mildly alkaline (pH 7.8); abrupt wavy boundary.

C3—16 to 19 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; mildly alkaline (pH 7.8); abrupt wavy boundary.

IIR—19 inches; fractured basalt bedrock.

Thickness of the solum is 3 to 7 inches. The profile is 0 to 5 percent coarse fragments. Reaction ranges from neutral to moderately alkaline.

The A and C horizons are dominantly brown or grayish brown. The color is influenced by the presence of dark minerals, and it changes little between the A and C horizons.

Basalt bedrock is at a depth of 10 to 20 inches. Typically, Wapi soils are free of coarse fragments except in areas merging with Rock outcrop. Thin coatings of calcium carbonate are on the upper surface of the bedrock and in cracks and pores in some areas.

Wheeler series

The Wheeler series consists of very deep, well drained soils that formed in thick loess. These soils are on hills and terraces that typically have southerly or westerly exposures. Slopes are 4 to 60 percent. The mean annual precipitation is about 11 inches. The mean annual soil temperature is about 50 degrees F.

Wheeler soils are similar to Wheelerville, Portneuf, and Pocatello soils. They are near Portneuf, Pocatello, Neeley, McDole, and Kucera soils. Wheelerville soils have a mean annual soil temperature of about 45 degrees F. Portneuf soils are 15 to 30 percent hard lime coated krotovinas (cicada nodules). McDole, Neeley, and Kucera soils have a mollic epipedon. Pocatello soils have a Cca horizon.

Typical pedon of Wheeler silt loam, 20 to 30 percent slopes, about 2 miles southeast of American Falls, SE1/4SW1/4 sec. 3, T. 8 S., R. 31 E.

A11—0 to 4 inches; very pale brown (10YR 7/3) silt loam, dark grayish brown (10YR 4/2) moist; weak thin and medium platy structure; slightly hard, friable, slightly sticky, and slightly plastic; many fine and very fine roots; many fine and very fine tubular and interstitial pores; strongly calcareous; moderately alkaline (pH 8.0); abrupt wavy boundary.

A12—4 to 8 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; common fine and very fine tubular and interstitial pores; strongly calcareous; moderately alkaline (pH 8.0); clear wavy boundary.

C1—8 to 17 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.0); gradual smooth boundary.

C2—17 to 29 inches; light gray (10YR 7/1) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few medium and common fine and very fine roots; many fine and very fine tubular pores; few hard cicada nodules; strongly calcareous; moderately alkaline (pH 8.2); gradual boundary.

C3—29 to 48 inches; white (10YR 8/2) silt loam, very pale brown (10YR 7/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few medium and common fine and very fine roots; many fine and very fine tubular pores; few hard cicada nodules; strongly calcareous; moderately alkaline (pH 8.2); gradual smooth boundary.

C4—48 to 72 inches; white (10YR 8/2) silt loam, very pale brown (10YR 7/3) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; few fine and very fine roots; many fine and very fine tubular pores; strongly calcareous; moderately alkaline (pH 8.2).

The A horizon is dominantly very pale brown or light gray. The C horizon is light gray or white. The profile is silt loam that is less than 15 percent material coarser than very fine sand and less than 18 percent clay. It is strongly calcareous throughout and is less than 15 percent cicada nodules. The lower part of the C horizon is saline-alkali in some pedons.

Wheelerville series

The Wheelerville series consists of very deep, well drained soils that formed in thick loess. These soils are on hills and terraces. Slopes are 4 to 75 percent. The mean annual precipitation is about 12 inches. The mean annual soil temperature is about 45 degrees F.

Wheelerville soils are similar to Portneuf, Pocatello, and Wheeler soils. They are near Kucera, Lanoak, and Newdale soils. Portneuf, Pocatello, and Wheeler soils have a mean annual soil temperature of about 50 degrees F. Kucera, Lanoak, and Newdale soils have a mollic epipedon.

Typical pedon of Wheelerville silt loam, 12 to 20 percent slopes, about 3 miles south of Pauline, 280 feet west and 80 feet south of northeast corner sec. 36, T. 10 S., R. 33 E.

A11—0 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium platy structure parting to weak fine granular; soft, friable, slightly sticky, and slightly plastic; many very fine and common medium and coarse roots; common fine and very fine interstitial pores; moderately calcareous; moderately alkaline (pH 8.0); clear smooth boundary.

A12—5 to 8 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky, and slightly plastic; many very fine and few medium and coarse roots; common very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.2); abrupt smooth boundary.

C1ca—8 to 35 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; moderate medium and fine angular blocky structure; hard, firm, slightly sticky, and slightly plastic; common fine and very fine roots; few very fine tubular pores; 25 percent lime coated krotovinas (nodules); moderately calcareous; moderately alkaline (pH 8.4); abrupt irregular boundary.

C2—35 to 44 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky, and slightly plastic; common very fine and few medium and coarse roots; common fine and very fine interstitial pores; moderately calcareous; strongly alkaline (pH 8.6); gradual wavy boundary.

C3—44 to 63 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky, and slightly plastic; common very fine and few coarse roots; common very fine tubular pores; moderately calcareous; strongly alkaline (pH 8.8).

The solum is about 5 to 10 inches thick. The upper part of the substratum is 20 to 50 percent hard lime coated nodules. Reaction ranges from moderately to strongly alkaline.

The A1 horizon is pale brown or light brownish gray. It is silt loam that is 12 to 18 percent clay. The C horizon is very pale brown or light gray silt loam. Many nodules are between depths of 5 and 35 inches. The soil is moderately calcareous throughout. There is little or no redistribution of carbonates except on the exterior surface of nodules.

Zunhall series

The Zunhall series consists of very deep, somewhat poorly drained soils that formed in alluvium of mixed origin. These soils are on bottom lands and low alluvial fans. Slopes are 0 to 3 percent. The mean annual precipitaion is about 14 inches. The mean annual soil temperature is about 45 degrees F.

Zunhall soils are similar to Parehat soils. They are near Ammon, Arbone, Arbone variant, and Newdale soils. Parehat soils have a mean annual soil temperature of about 50 degrees F. Ammon soils are moderately or slightly calcareous throughout, are well drained, and do not have mottles. Arbone and Arbone variant soils have a B2 horizon, are well drained, and do not have mottles. Newdale soils have a noncalcareous A horizon, are well drained, and do not have mottles.

Typical pedon of Zunhall silt loam, 0 to 3 percent slopes, about 5 miles southeast of Rockland, SE1/4SW1/4 sec. 33, T. 10 S., R. 31 E.

A11—0 to 11 inches; gray (10YR 6/1) silt loam, dark gray (10YR 4/1) moist; moderate medium and fine granular structure; soft, friable, slightly sticky, and slightly plastic; common medium and fine roots; many fine and very fine interstitial pores; moderately calcareous; strongly alkaline (pH 8.8); gradual wavy boundary.

A12—11 to 15 inches; light brownish gray (2.5Y 6/2) silt loam, grayish brown (2.5Y 5/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common medium and fine roots; common fine and very fine tubular pores; moderately calcareous; moderately alkaline (pH 8.4); gradual wavy boundary.

C1ca—15 to 28 inches; white (2.5Y 8/1) silt loam, gray (2.5Y 6/1) moist; few medium faint dark brown mottles; weak medium and fine subangular blocky structure; hard, firm, slightly sticky, and slightly plastic; few medium and fine roots; many fine and very fine tubular pores; strongly calcareous; strongly alkaline (pH 8.6); clear wavy boundary.

C2ca—28 to 42 inches; white (2.5Y 8/2) silt loam, light gray (2.5Y 7/2) moist; common medium faint dark brown mottles; massive; hard, firm, slightly sticky, and slightly plastic; few fine and medium roots; many fine and very fine tubular pores; common firm 1 to 2 inch lime concretions; strongly calcareous; moderately alkaline (pH 8.4); clear wavy boundary.

C3—42 to 60 inches; white (2.5Y 8/1) silt loam, gray (2.5Y 6/1) moist; common medium distinct dark brown mottles; massive; hard, firm, slightly sticky, and slightly plastic; few fine and very fine roots; many fine and very fine tubular pores; moderately calcareous; strongly alkaline (pH 8.6).

The A1 horizon is gray and light brownish gray silt loam 10 to 20 inches thick. It is moderately to very strongly calcareous and moderately to strongly alkaline. The C horizon is light gray to white silt loam. It is moderately to very strongly calcareous and moderately to strongly alkaline.

The colors of the A horizon appear to be masked by the white pigment of the lime. Faint mottles begin at a depth of about 15 inches and become more distinct with increasing depth. The soil has a high water table that is at 18 to 24 inches early in spring and fluctuates between 18 and 60 inches late in spring and early in summer.

Formation of the soils

The factors that determine the kind of soil at any given point are the composition of the parent material, the climate under which the soil material accumulated or weathered, the relief and drainage, the plants and animals on and in the soil, and the length of time that the forces of soil development have acted on the soil material.

The survey area can be divided into four broad areas (*3*). Soils in these areas distinctly differ as a result of interactions of parent material (fig. 11) (*4*), climate, relief, and vegetation over a period of time.

One broad area is north of the Snake River, in the northwestern part of the county. It is a thin to relatively thick, loess-covered lava plain of Snake River basalt that ranges in age from Pleistocene to Recent. The topography is nearly level to sloping on the thicker loess sheets but becomes more irregular as the loess thins. Recent basalt flows are nearly barren and have very rough irregular surfaces. The irregular nature of these flows greatly influences soil depth and, thus, the soil series. The deep Portneuf, the moderately deep Portino, and the shallow Trevino soils formed in these windblown silts (loess). The moderately deep Vining and shallow Wapi soils formed in eolian sandy materials from wind-modified lacustrine and fluviatile deposits of the Snake River and lakes formed by lava dams.

The low rainfall, mostly in winter, and the hot dry summers produce sagebrush-bunchgrass vegetation. The soils in this first broad area have weak development as a result of insufficient time for soil processes to interact in this type of environment.

A second broad area is adjacent to the Snake River. Successive lava flows have forced the river southward. Its present channel meanders through sandy and gravelly beds of recent alluvium. The well drained Aberdeen, Grandview, and Sterling terraces formed when a lava flow dammed the Snake River and the terrace material was deposited behind the lava dam. The terraces formed as the river breached the dam and downcut its channel. This area extends from either side of American Falls Reservoir downstream to Cedar Butte. It is underlain by the clay, silt, sand, and gravel of Pleistocene age. A small area of recent alluvium is downstream from Rock Creek and in the Channel Lake area north of the Snake River near the Blaine-Power County line. It consists of level to gently sloping stream terraces and narrow stream bottoms.

The very deep Kecko and Escalante sandy loams and the very deep Declo and McDole silt loams are on the terraces. The somewhat poorly drained Parehat soils are in the low swales.

The soils in this second broad area have very little development. Because they formed in recent alluvium in a low rainfall zone, the vegetation is sagebrush and bunchgrass in well drained areas and sedges, saltgrass, and cattails in the wetter areas.

A third broad geological area includes mountain ranges in the southern part of Power County where elevations are 6,000 to over 8,000 feet. In this area are the

Bannock Range, the Deep Creek Mountains, and foot slopes of the Sublette Range. These mountains, part of the Basin and Range Province, have a north-south orientation. The mountain structure consists of huge upthrown and tilted blocks of bedrock on either side of a basin formed by down dropped blocks (graben), or by the lower side of a tilted block. The upthrown blocks have been eroded into rugged mountain ranges. The sediments washed off these ranges have buried the bedrock floor of the basin.

Dominant rocks are quartzite, limestone, dolomite (ledge formers), and shales and sandstones (slope formers) of Paleozoic age, mainly Pennsylvanian and Mississippian. The calcium carbonate content of these rocks influences the parent material derived from them. Soils developing on these diverse parent materials are either strongly calcareous in all or part of the profile or noncalcareous. Soil textures are influenced by rock types and by fault gouged material adjacent to major fault zones. For example, the shallow Hymas soils commonly occur on ridgetops and on outcrops of limestone and dolomite. The moderately deep Ridgecrest soils commonly occur on the mountain slopes. The very deep Wahtigup soils forming in alluvium and colluvium derived from limestone and dolomite are on foot slopes. The deep Moohoo soils are developing in alluvium and colluvium derived from quartzite and sandstone. The very deep Manila soils, which are 35 to 60 percent clay, are developing in alluvium associated with the fault gouged zones.

The higher rainfall and cool summers combined with different aspects result in varied microclimates and vegetation interacting on diverse parent materials. In addition, natural erosion on the steeper slopes tends to keep pace with soil forming processes. Consequently, the soils in this third broad area vary in the thickness and color of surface horizons, the clay accumulation in the subsoil, and the depth to calcareous horizons.

A fourth broad area consists of mountain valleys in the Basin and Range Province. These graben valleys filled with sedimentary deposits are south of the Snake River Plain in the Rockland and Arbon Valleys. They are made up of the loess-covered Salt Lake Formation and associated strata. The loess cover is 200 to 300 feet thick adjacent to and south of the Snake River Plain. It becomes thinner with increasing elevation. It is not easily detected on the steep residual mountain slopes on either side of the valleys above 6,000 feet elevation. The underlying Salt Lake Formation consists of sedimentary deposits of sand, silt, and gravel of lacustrine and fluviatile origin. The landforms in the valleys are controlled by the underlying alluvial deposits beneath the loess cover. These coalescing alluvial fans are long, convex, and nearly level to steep as the mountain front is approached.

Soils in this area that are developing in loess are the very deep Newdale, Rexburg, and Lanoak soils. Hondoho soils occur on the ridges and knobs where the loess has been removed (fig. 12). They are forming in the gravelly or cobbly alluvial sediments of the Salt Lake Formation. Arbone soils are mainly on fans and terraces in mixed loess and alluvial material.

The 13 to 16 inch precipitation zone provides sufficient moisture for grasses and shrubs. Because this vegetation provides more organic matter, the surface soils are distinctly darker colored than the surface soils in the other three broad areas. Also, calcium carbonates have been leached from the surface layer and subsoil and have accumulated in the lower soil horizons.

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim. An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single mapping unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Blowout. A shallow depression from which all or most of the soil material has been removed by wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to frequent flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid. A soil having measurable amounts of calcium carbonate or magnesium carbonate. The ratings used in this survey are as follows—

	Calcium carbonate equivalent
Slightly calcareous	1 to 3 percent
Moderately calcareous	3 to 15 percent
Strongly calcareous	15 to 30 percent
Very strongly calcareous	more than 30 percent

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the bases of steep slopes.

Color, soil. Color names and mathematical (Munsell) notations used in this survey are generally taken from standard color charts. In some places these colors have been generalized as follows—

Light colored	Munsell value 6 or 7
Slightly dark colored	Munsell value 5
Dark colored	Munsell value 3 or 4

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

Complex, soil. A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping (or contour farming). Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is 40 or 80 inches (1 or 2 meters).

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave. Unstable walls of cuts made by earth-moving equipment. The soil sloughs easily.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. A delay in grazing until range plants have reached a specified stage of growth. Grazing is deferred in order to increase the vigor of forage and to allow desirable plants to produce seed. Contrasts with continuous grazing and rotation grazing.

Depth, soil. The effective depth to which plant roots can readily penetrate and not be impeded by bedrock or a hardpan. The depth classes used in this survey are as follows—

	Depth
Very shallow	less than 10 inches
Shallow	10 to 20 inches
Moderately deep	20 to 40 inches
Deep	40 to 60 inches
Very deep	more than 60 inches

Depth to rock. Bedrock at a depth that adversely affects the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

Drainage, surface. Runoff, or surface flow of water, from an area.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the build-

ing up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Favorable. Favorable soil features for the specified use.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May*, for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forage. Plant material used as feed by domestic animals. Forage can be grazed or cut for hay.

Forb. Any herbaceous plant not a grass or a sedge.

Frost action. Freezing and thawing of soil moisture. Frost action can damage structures and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Green manure (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Gypsum. Hydrous calcium sulphate.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:
O horizon.—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.
A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.
A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.
B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered, but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, invader plants are those that follow disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Krotovina. Irregular tubular streaks within one horizon of material transported from another horizon. These streaks are caused by filling of channels made by insets or other burrowing animals.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones. Rock fragments 10 inches (25 centimeters) or more across. Large stones adversely affect the specified use.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. Inadequate strength for supporting loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is greater than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous areas. Areas that have little or no natural soil, are too nearly inaccessible for orderly examination, or cannot otherwise be feasibly classified.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

Moderately fine textured (moderately heavy textured) soil. Clay loam, sandy clay loam, and silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material mixed with mineral soil material. The content of organic matter is more than 20 percent.

Munsell notation. A designation of color by degrees of the three single variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3.

Nutrient, plant. Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Plant nutrients are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil; and carbon, hydrogen, and oxygen obtained largely from the air and water.

Organic matter. The bodies of dead organisms and the residues of living matter deposited on and within the soil. The classes of soil organic matter content used in this survey are as follows—

Low	0 to 1 percent
Moderate	1 to 3.5 percent
High	more than 3.5 percent

Pan. A compact, dense layer in a soil. A pan impedes the movement of water and the growth of roots. The word "pan" is commonly combined with other words that more explicitly indicate the nature of the layer; for example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderately rapid* (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

Piping. Moving water of subsurface tunnels or pipelike cavities in the soil.

Pitting. Formation of pits as a result of the melting of ground ice after the removal of plant cover.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Productivity (soil). The capability of a soil for producing a specified plant or sequence of plants under a specified system of management. Productivity is measured in terms of output, or harvest, in relation to input.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Range (or rangeland). Land that, for the most part, produces native plants suitable for grazing by livestock; includes land supporting some forest trees.

Range condition. The health or productivity of forage plants on a given range, in terms of the potential productivity under normal climate and the best practical management. Condition classes generally recognized are—*excellent, good, fair,* and *poor*. The classification is based on the percentage of original, or assumed climax vegetation on a site, as com-

pared to what has been observed to grow on it when well managed.

Range site. An area of range where climate, soil, and relief are sufficiently uniform to produce a distinct kind and amount of native vegetation.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulates over disintegrating rock.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth. Shallow root zone. The soil is shallow over a layer that greatly restricts roots. See Root zone.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline-alkali soil. A soil that contains a harmful concentration of salts and exchangeable sodium; contains harmful salts and is strongly alkaline; or contains harmful salts and exchangeable sodium and is very strongly alkaline. The salts, exchangeable sodium, and alkaline reaction are in the soil in such location that growth of most crop plants is less than normal.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Saprolite (geology). Soft, earthy, clay-rich, thoroughly decomposed rock formed in place by chemical weathering of igneous and metamorphic rock. In soil survey, the term saprolite is applied to any unconsolidated residual material underlying the soil and grading to hard bedrock below.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Small stones. Rock fragments 3 to 10 inches (7.5 to 25 centimeters) in diameter. Small stones adversely affect the specified use.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *very coarse sand* (2.0 millimeters to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt*

(0.005 to 0.002 millimeter); and *clay* (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil, or partly worked into the soil, to provide protection from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use or management.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or " very fine."

Thin layer. Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Tuff. A compacted deposit 50 percent or more volcanic ash and dust.

Unstable fill. Risk of caving or sloughing in banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial melt water. In nonglaciated regions, alluvium deposited by heavily loaded streams emerging from hills or mountains and spreading sediments onto the lowland as a series of adjacent alluvial fans.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but the limited geographic soil area does not justify creation of a new series.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.
Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.
Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.
Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

ILLUSTRATIONS

Figure 1.—Typical landscape in the Wahtigup-Hondoho map unit. The uncultivated areas are mostly Wahtigup and Hondoho soils. The cultivated areas are mostly Rexburg and Lanoak soils.

Figure 2.—Hayfield in Arbon Valley on Ammon silt loam, 0 to 3 percent slopes. The lower background is Newdale soils. The mountains are the Bannock Range.

Figure 3.—Soil blowing on Feltham loamy sand, 0 to 2 percent slopes, northwest of American Falls Reservoir.

Figure 4.—The Snake River Plain at Massacre Rocks State Park. The Kecko-Clems-Vining association, undulating, is in the background. The steep slopes along the river are Rock outcrop and Torriorthents.

Figure 5.—Potatoes on Neeley silt loam, 2 to 4 percent slopes, in Pleasant Valley.

Figure 6.—Range on Neeley silt loam, 12 to 20 percent slopes. The native vegetation is bluebunch wheatgrass, Thurber's needlegrass, arrowleaf balsamroot, and big sagebrush.

Figure 7.—Summer fallow on Newdale silt loam, 0 to 4 percent slopes. The hilly area is the dark colored Rexburg soils and the light colored Wheelerville soils. Wahtigup-Hondoho soils are on the lower mountain ridges.

Figure 8.—Winter wheat on Newdale soils in Arbon Valley. Hymas-Wahtigup-Ridgecrest soils are in the Bannock Range.

Figure 9.—Irrigated winter wheat on Portneuf silt loam, bedrock substratum, 0 to 2 percent slopes. The background shows a recent basalt flow.

Figure 10.—Rock outcrop and Trevino stony loam in an area of Trevino-Portino-Rock outcrop complex, rolling. The vegetation is mostly bluebunch wheatgrass, Thurber's needlegrass, and big sagebrush.

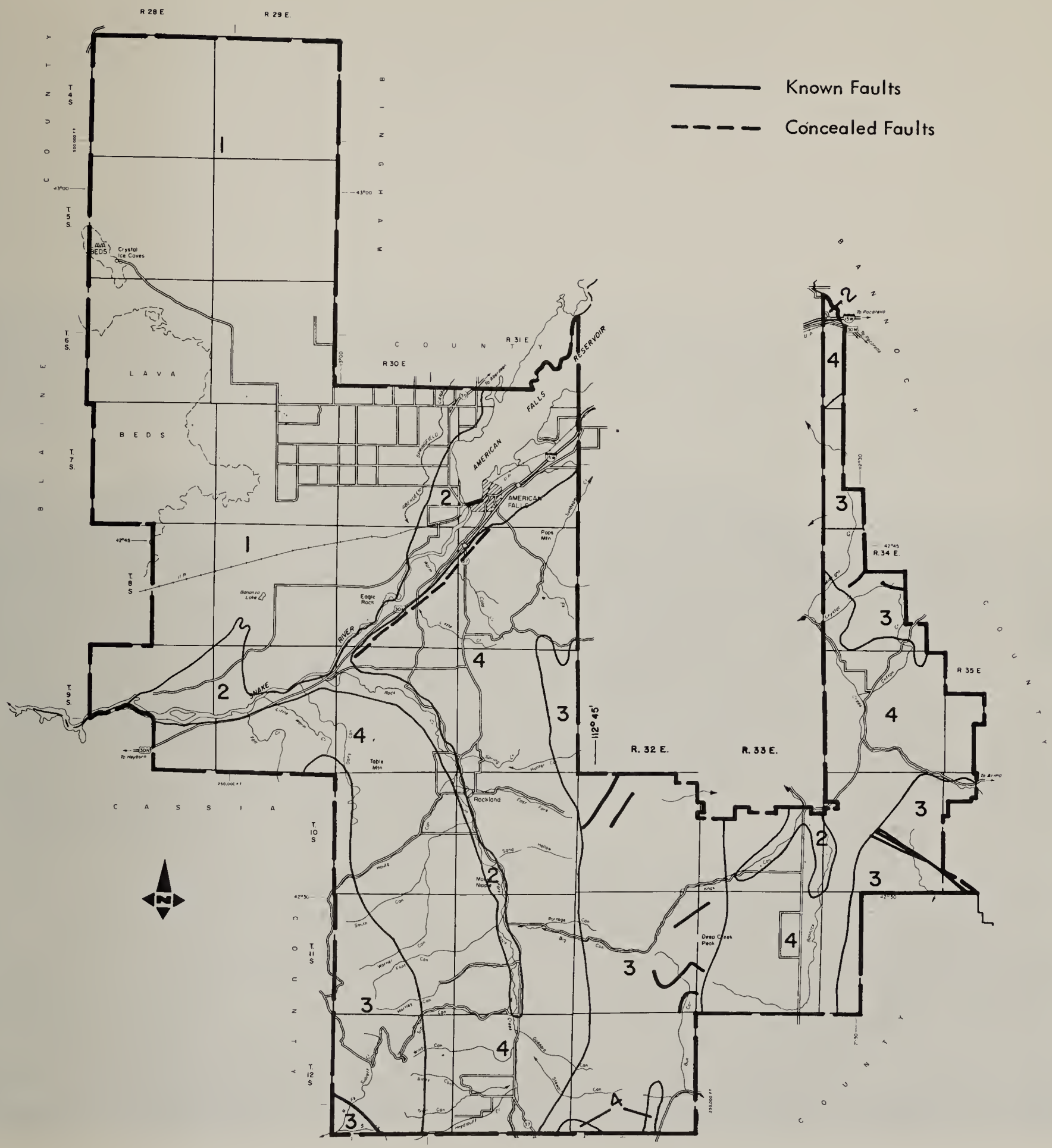

Figure 11.—Geology of the Power County Area. The area identified as 1 is Snake River basalt covered with loess of varying thickness. 2 is an area of loamy and sandy alluvial deposits. 3 identifies mountain ranges covered with loess of varying thickness, and 4, mountain valleys of alluvium covered with thick deposits of loess.

Figure 12.—Lanoak and Hondoho soils near Clifton Creek. Scout Mountain is in the background.

TABLES

TABLE 1.--TEMPERATURE AND PRECIPITATION

Month	Temperature[1]						Precipitation[1]				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days[2]	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	33.9	16.9	25.4	51	-17	30	.99	.42	1.45	4	8.5
February---	39.2	21.0	30.1	58	-9	52	.71	.35	1.00	3	5.2
March------	46.6	25.4	36.1	69	4	78	.71	.31	1.03	3	3.9
April------	57.6	32.8	45.3	76	18	176	1.13	.46	1.66	4	1.8
May--------	68.4	40.9	54.7	87	25	456	1.28	.58	1.85	4	.3
June-------	77.0	47.5	62.3	94	34	669	1.09	.41	1.63	4	.0
July-------	87.3	53.9	70.6	97	39	949	.42	.09	.68	1	.0
August-----	85.8	52.7	69.3	96	37	908	.68	.14	1.09	2	.0
September--	75.7	43.6	59.7	91	26	591	.65	.10	1.06	2	.0
October----	62.8	34.4	48.6	81	19	278	.83	.25	1.29	2	1.0
November---	46.2	27.0	36.6	65	6	59	.90	.41	1.30	3	2.1
December---	35.6	20.0	27.9	54	-7	13	.84	.37	1.21	3	7.3
Year-------	59.7	34.7	47.2	97	-18	4,259	10.23	7.49	12.33	35	30.1

[1]Recorded in the period 1951-73 at American Falls, Idaho.
[2]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

Probability	Temperature		
	24 F or lower	28 F or lower	32 F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 28	May 22	June 4
2 years in 10 later than--	April 23	May 16	May 29
5 years in 10 later than--	April 12	May 5	May 17
First freezing temperature in fall:			
1 year in 10 earlier than--	October 4	September 18	September 11
2 years in 10 earlier than--	October 10	September 24	September 16
5 years in 10 earlier than--	October 22	October 5	September 24

[1]Recorded in the period 1951-73 at American Falls, Idaho.

TABLE 3.--GROWING SEASON

Probability	Daily minimum temperature during growing season		
	Higher than 24 F	Higher than 28 F	Higher than 32 F
	Days	Days	Days
9 years in 10	164	127	103
8 years in 10	174	136	112
5 years in 10	192	152	130
2 years in 10	210	168	147
1 year in 10	219	177	156

[1]Recorded in the period 1951-73 at American Falls, Idaho.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
1	Ammon silt loam, 0 to 3 percent slopes	7,675	1.1
2	Arbone loam, 0 to 4 percent slopes	1,212	0.2
3	Arbone loam, 4 to 12 percent slopes	2,047	0.3
4	Arbone loam, 12 to 20 percent slopes	462	0.1
5	Arbone-Hondoho association, rolling	2,798	0.4
6	Arbone-Hondoho association, hilly	1,667	0.2
7	Arbone Variant silt loam, 0 to 4 percent slopes	1,107	0.2
8	Declo fine sandy loam, 0 to 2 percent slopes	844	0.1
9	Declo fine sandy loam, 2 to 4 percent slopes	733	0.1
10	Declo fine sandy loam, 4 to 8 percent slopes	210	*
11	Declo loam, 0 to 2 percent slopes	5,151	0.7
12	Declo loam, 2 to 4 percent slopes	6,987	1.0
13	Declo loam, 4 to 8 percent slopes	1,314	0.2
14	Declo loam, 8 to 12 percent slopes	525	0.1
15	Declo loam, 12 to 20 percent slopes	451	0.1
16	Declo Variant bouldery loam, 2 to 4 percent slopes	432	0.1
17	Dranyon-Ricrest association, steep	1,925	0.3
18	Feltham loamy sand, 0 to 2 percent slopes	1,353	0.2
19	Feltham loamy sand, 2 to 4 percent slopes	1,132	0.2
20	Feltham loamy sand, 4 to 8 percent slopes	250	*
21	Feltham loamy sand, 8 to 12 percent slopes	215	*
22	Hondoho-Arbone complex, steep	1,889	0.3
23	Hymas-Wahtigup-Ridgecrest complex, very steep	40,776	5.8
24	Kecko-Clems-Vining association, undulating	3,782	0.5
25	Kecko-Escalante complex, 2 to 4 percent slopes	5,691	0.8
26	Kecko-Escalante complex, 4 to 8 percent slopes	894	0.1
27	Kecko-Escalante complex, 8 to 12 percent slopes	1,580	0.2
28	Kucera silt loam, steep	760	0.1
29	Kucera silt loam, very steep	3,279	0.5
30	Lanoak silt loam, 4 to 12 percent slopes	3,235	0.5
31	Lanoak silt loam, 12 to 20 percent slopes	4,658	0.7
32	Lanoak silt loam, 20 to 30 percent slopes	3,646	0.5
33	Lanoak silt loam, 30 to 45 percent slopes	628	0.1
34	Manila-Dranyon association, hilly	1,435	0.2
35	McCarey-Rock outcrop complex, undulating	47,490	6.8
36	McDole-Parehat complex, 0 to 3 percent slopes	3,436	0.5
37	Mike extremely stony silt loam, steep	5,577	0.8
38	Moohoo-Pavohroo complex, very steep	23,300	3.3
39	Neeley silt loam, 0 to 2 percent slopes	664	0.1
40	Neeley silt loam, 2 to 4 percent slopes	25,185	3.6
41	Neeley silt loam, 4 to 8 percent slopes	6,014	0.9
42	Neeley silt loam, 8 to 12 percent slopes	817	0.1
43	Neeley silt loam, 0 to 4 percent slopes	2,343	0.3
44	Neeley silt loam, 4 to 12 percent slopes	6,101	0.9
45	Neeley silt loam, 12 to 20 percent slopes	8,459	1.2
46	Neeley silt loam, 20 to 30 percent slopes	2,971	0.4
47	Neeley-Neeley Variant complex, 2 to 4 percent slopes	3,168	0.5
48	Neeley-Neeley Variant complex, 4 to 8 percent slopes	738	0.1
49	Neeley-Neeley Variant complex, 8 to 12 percent slopes	521	0.1
50	Newdale silt loam, 0 to 4 percent slopes	15,469	2.2
51	Newdale silt loam, 4 to 12 percent slopes	73,082	10.5
52	Newdale silt loam, 12 to 20 percent slopes	12,823	1.8
53	Newdale silt loam, 20 to 30 percent slopes	2,042	0.3
54	Paniogue sandy loam, 2 to 4 percent slopes	437	0.1
55	Paniogue loam, 0 to 2 percent slopes	324	*
56	Paniogue loam, 2 to 4 percent slopes	1,201	0.2
57	Paniogue complex, 4 to 12 percent slopes	467	0.1
58	Pits	176	*
59	Pocatello silt loam, 2 to 4 percent slopes	245	0.1
60	Pocatello silt loam, 4 to 8 percent slopes	1,564	0.2
61	Pocatello silt loam, 8 to 12 percent slopes	1,360	0.2
62	Pocatello silt loam, 0 to 4 percent slopes	1,557	0.2
63	Pocatello silt loam, 4 to 12 percent slopes	3,923	0.6
64	Pocatello silt loam, 12 to 20 percent slopes	5,840	0.8
65	Pocatello silt loam, 20 to 30 percent slopes	805	0.1
66	Portino stony loam, 2 to 4 percent slopes	6,763	1.0
67	Portino stony loam, 4 to 8 percent slopes	3,241	0.5
68	Portino silt loam, 2 to 4 percent slopes	6,790	1.0
69	Portino silt loam, 4 to 8 percent slopes	562	0.1
70	Portino-Trevino-Rock outcrop complex, rolling	28,981	4.2

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
71	Portneuf silt loam, bedrock substratum, 0 to 2 percent slopes	586	0.1
72	Portneuf silt loam, bedrock substratum, 2 to 4 percent slopes	12,086	1.7
73	Portneuf silt loam, bedrock substratum, 4 to 8 percent slopes	2,810	0.4
74	Portneuf-Quincy complex, rolling	5,833	0.8
75	Quincy fine sand, rolling	12,494	1.8
76	Quincy loamy fine sand, 4 to 12 percent slopes	1,657	0.2
77	Quincy-Declo-Vining association, rolling	1,266	0.2
78	Rexburg silt loam, 4 to 12 percent slopes	18,377	2.6
79	Rexburg silt loam, 12 to 20 percent slopes	7,329	1.0
80	Rexburg silt loam, 20 to 30 percent slopes	491	0.1
81	Ricrest-Ridgecrest complex, very steep	28,398	4.1
82	Rock outcrop	36,926	5.3
83	Rock outcrop-Tenno complex, rolling	11,298	1.6
84	Rock outcrop-Tenno complex, very steep	1,822	0.2
85	Rock outcrop-Trevino-Portino complex, rolling	11,067	1.6
86	Rock outcrop and Torriorthents	2,769	0.4
87	Schodson fine sandy loam, 0 to 3 percent slopes	655	0.1
88	Sheege-Pavohroo association, very steep	22,341	3.2
89	Trevino-Portino-Rock outcrop complex, rolling	13,073	1.9
90	Vining-Quincy-Rock outcrop complex, undulating	6,881	1.0
91	Vining-Wapi-Rock outcrop complex, undulating	9,225	1.3
92	Wahtigup-Hondoho complex, steep	11,187	1.6
93	Wahtigup-Hondoho complex, very steep	10,659	1.5
94	Wheeler silt loam, 4 to 12 percent slopes	431	0.1
95	Wheeler silt loam, 12 to 20 percent slopes	3,531	0.5
96	Wheeler silt loam, 20 to 30 percent slopes	11,990	1.7
97	Wheeler silt loam, 30 to 60 percent slopes	5,958	0.9
98	Wheelerville silt loam, 4 to 12 percent slopes	1,829	0.2
99	Wheelerville silt loam, 12 to 20 percent slopes	19,125	2.7
100	Wheelerville silt loam, 20 to 30 percent slopes	3,293	0.5
101	Wheelerville silt loam, 30 to 60 percent slopes	1,061	0.1
102	Xerollic Calciorthids, steep	438	0.1
103	Zunhall silt loam, 0 to 3 percent slopes	5,330	0.8
	Water	35	*
	Total	697,430	100.0

* Less than 0.1 percent.

TABLE 5.--YIELDS PER ACRE OF CROPS

[Yields in columns N are for nonirrigated soils; those in columns I are for irrigated soils. All yields were estimated for a high level of management in 1975. Absence of a yield figure indicates the crop is seldom grown or is not suited]

Soil name and map symbol	Irish potatoes		Sugar beets		Winter wheat		Barley		Alfalfa hay		Spring wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
	Cwt	Cwt	Ton	Ton	Bu	Bu	Bu	Bu	Ton	Ton	Bu	Bu
1---------- Ammon	---	280	---	19	28	85	28	100	2	6	25	---
2---------- Arbone	---	---	---	---	27	---	27	---	1.5	---	24	---
3, 4---------- Arbone	---	---	---	---	27	---	26	---	1.0	---	23	---
5, 6: Arbone----------	---	---	---	---	27	---	26	---	1.0	---	23	---
Hondoho----------	---	---	---	---	21	---	21	---	---	---	18	---
7---------- Arbone variant	---	---	---	---	24	---	24	---	1.0	---	22	---
8---------- Declo	---	270	---	18	---	95	---	90	---	5.0	---	70
9---------- Declo	---	260	---	18	---	90	---	90	---	5.0	---	70
10---------- Declo	---	250	---	16	---	80	---	80	---	4.0	---	60
11---------- Declo	---	270	---	20	---	95	---	100	---	6.0	---	80
12---------- Declo	---	260	---	18	---	92	---	90	---	5.0	---	70
13---------- Declo	---	250	---	16	---	90	---	80	---	4.0	---	60
14---------- Declo	---	225	---	12	---	85	---	70	---	4.0	---	50
15---------- Declo	---	---	---	---	---	---	---	---	---	3.0	---	---
18---------- Feltham	---	275	---	17	---	80	---	90	---	4.5	---	80
19---------- Feltham	---	270	---	17	---	80	---	90	---	4.5	---	80
20, 21---------- Feltham	---	250	---	16	---	70	---	80	---	4.2	---	70
22---------- Hondoho	---	---	---	---	21	---	21	---	---	---	18	---
25---------- Kecko	---	290	---	19.0	---	80	---	90	---	4.5	---	75
26---------- Kecko	---	251	---	16.0	---	70	---	80	---	4.5	---	65
27---------- Kecko	---	240	---	15.1	---	65	---	70	---	4.0	---	60
28---------- Kucera	---	---	---	---	36	---	42	---	---	---	32	---

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS--Continued

Soil name and map symbol	Irish potatoes		Sugar beets		Winter wheat		Barley		Alfalfa hay		Spring wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
	Cwt	Cwt	Ton	Ton	Bu	Bu	Bu	Bu	Ton	Ton	Bu	Bu
30, 31---------- Lanoak	---	---	---	---	36	---	45	---	2.5	---	33	---
32---------- Lanoak	---	---	---	---	35	---	43	---	2.0	---	30	---
36---------- McDole	---	247	---	19	17	75	18	80	---	4.0	---	68
39---------- Neeley	---	320	---	22	20	95	22	120	---	6.0	---	95
40---------- Neeley	---	315	---	22	20	95	22	120	---	6.0	---	95
41---------- Neeley	---	310	---	20	18	90	20	110	---	5.5	---	90
42---------- Neeley	---	300	---	18	18	85	---	105	---	5.0	---	85
43---------- Neeley	---	315	---	22	20	95	22	120	---	6.0	---	95
44---------- Neeley	---	300	---	18	20	85	22	105	---	5.0	---	85
45, 46---------- Neeley	---	---	---	---	18	---	18	---	---	---	---	---
47---------- Neeley	---	270	---	17	---	80	---	100	---	5.0	---	80
48---------- Neeley	---	250	---	15	---	75	---	90	---	5.0	---	75
49---------- Neeley	---	230	---	---	---	70	---	85	---	5.0	---	70
50---------- Newdale	---	---	---	---	28	---	30	---	1.5	---	27	---
51---------- Newdale	---	---	---	---	27	---	29	---	1.5	---	26	---
52---------- Newdale	---	---	---	---	27	---	29	---	1.5	---	26	---
53---------- Newdale	---	---	---	---	25	---	28	---	---	---	24	---
54---------- Paniogue	---	280	---	21	---	70	---	90	---	5	---	60
55---------- Paniogue	---	300	---	22	---	75	---	100	---	6	---	70
56---------- Paniogue	---	280	---	21	---	70	---	90	---	5	---	60
57---------- Paniogue	---	220	---	15	---	60	---	70	---	3	---	40
59---------- Pocatello	---	325	---	20	---	95	---	100	---	4	---	90
60---------- Pocatello	---	250	---	18	---	80	---	85	---	3.8	---	75

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS--Continued

Soil name and map symbol	Irish potatoes		Sugar beets		Winter wheat		Barley		Alfalfa hay		Spring wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
	Cwt	Cwt	Ton	Ton	Bu	Bu	Bu	Bu	Ton	Ton	Bu	Bu
61---------- Pocatello	---	220	---	18	---	65	---	65	---	3.8	---	60
62---------- Pocatello	---	325	---	20	---	95	---	100	---	4	---	90
63---------- Pocatello	---	220	---	18	---	65	---	65	---	3.8	---	60
64---------- Pocatello	---	---	---	---	---	---	---	---	---	3.2	---	---
66---------- Portino	---	225	---	18	---	70	---	85	---	5	---	65
67---------- Portino	---	210	---	16	---	60	---	80	---	5	---	60
68---------- Portino	---	225	---	18	---	70	---	85	---	5	---	65
69---------- Portino	---	210	---	16	---	60	---	80	---	5	---	60
71---------- Portneuf	---	325	---	20	---	110	---	100	---	6	---	110
72---------- Portneuf	---	325	---	20	---	110	---	100	---	6	---	110
73---------- Portneuf	---	250	---	18	---	90	---	90	---	4	---	90
75, 76---------- Quincy	---	170	---	9	---	25	---	40	---	2	---	---
78---------- Rexburg	---	---	---	---	35	---	35	---	2.0	---	33	---
79---------- Rexburg	---	---	---	---	35	---	35	---	2.0	---	23	---
80---------- Rexburg	---	---	---	---	25	---	25	---	1.5	---	---	---
87---------- Schodson	---	---	---	20	---	75	---	70	---	5	---	---
94---------- Wheeler	---	250	---	14.0	---	70	---	80	---	4.5	---	---
95---------- Wheeler	---	---	---	---	---	---	---	---	---	3.2	---	---
98, 99, 100---------- Wheelerville	---	---	---	---	18	---	20	---	---	---	---	---

* See map unit description for the composition and behavior of the map unit.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES

[Soils not listed do not support rangeland vegetation suited to grazing]

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
1---------- Ammon	Loamy 8 to 12 inches	Favorable	1,000	Bluebunch wheatgrass----------	20
		Normal	750	Antelope bitterbrush----------	10
		Unfavorable	500	Big sagebrush----------	10
				Nevada bluegrass----------	5
				Prairie junegrass----------	5
				Needlegrass----------	5
				Western wheatgrass----------	5
				Arrowleaf balsamroot----------	5
				Tapertip hawksbeard----------	5
5*, 6*:					
Arbone----------	Loamy 12 to 16 inches	Favorable	1,600	Bluebunch wheatgrass----------	25
		Normal	1,100	Slender wheatgrass----------	10
		Unfavorable	800	Needlegrass----------	10
				Big sagebrush----------	10
				Antelope bitterbrush----------	10
				Threetip sagebrush----------	8
				Idaho fescue----------	7
				Prairie junegrass----------	5
				Columbia needlegrass----------	5
Hondoho----------	Loamy 12 to 16 inches	Favorable	1,400	Bluebunch wheatgrass----------	25
		Normal	950	Needlegrass----------	10
		Unfavorable	700	Big sagebrush----------	10
				Nevada bluegrass----------	5
				Prairie junegrass----------	5
				Columbia needlegrass----------	5
				Western wheatgrass----------	5
				Arrowleaf balsamroot----------	5
				Tapertip hawksbeard----------	5
				Antelope bitterbrush----------	5
8, 9, 10, 11, 12, 13, 14, 15-------- Declo	Loamy 8 to 12 inches	Favorable	1,000	Bluebunch wheatgrass----------	30
		Normal	700	Thurber needlegrass----------	15
		Unfavorable	500	Big sagebrush----------	15
				Sandberg bluegrass----------	5
				Arrowleaf balsamroot----------	5
				Rabbitbrush----------	5
16---------- Declo variant	Loamy 8 to 12 inches	Favorable	950	Bluebunch wheatgrass----------	30
		Normal	600	Big sagebrush----------	15
		Unfavorable	450	Thurber needlegrass----------	7
				Nevada bluegrass----------	5
				Needleandthread----------	5
				Arrowleaf balsamroot----------	5
				Lupine----------	5
				Phlox----------	5
				Antelope bitterbrush----------	5
				Threetip sagebrush----------	5
17*:					
Ricrest----------	Loamy 16 to 22 inches	Favorable	2,500	Bluebunch wheatgrass----------	30
		Normal	1,600	Idaho fescue----------	10
		Unfavorable	1,000	Big sagebrush----------	10
				Nevada bluegrass----------	5
				Columbia needlegrass----------	5
				Arrowleaf balsamroot----------	5
				Saskatoon serviceberry--------	5
				Antelope bitterbrush----------	5

See footnote at end of table.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
18, 19, 20, 21----- Feltham	Sandy 8 to 12 inches	Favorable	1,000	Needleandthread	20
		Normal	650	Indian ricegrass	10
		Unfavorable	400	Yellow wildrye	10
				Big sagebrush	10
				Antelope bitterbrush	10
				Sand dropseed	5
				Lupine	5
				Tall green rabbitbrush	5
				Bluebunch wheatgrass	5
22*:					
Hondoho	Loamy 12 to 16 inches	Favorable	1,400	Bluebunch wheatgrass	25
		Normal	950	Needlegrass	10
		Unfavorable	700	Big sagebrush	10
				Nevada bluegrass	5
				Prairie junegrass	5
				Columbia needlegrass	5
				Western wheatgrass	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
				Antelope bitterbrush	5
Arbone	Loamy 12 to 16 inches	Favorable	1,600	Bluebunch wheatgrass	25
		Normal	1,100	Slender wheatgrass	10
		Unfavorable	800	Needlegrass	10
				Big sagebrush	10
				Antelope bitterbrush	10
				Threetip sagebrush	8
				Idaho fescue	7
				Prairie junegrass	5
				Columbia needlegrass	5
23*:					
Hymas	Steep Stony Slope 12 to 16 inches	Favorable	1,000	Bluebunch wheatgrass	20
		Normal	700	Low sagebrush	15
		Unfavorable	400	Antelope bitterbrush	10
				Western wheatgrass	5
				Prairie junegrass	5
				Nevada bluegrass	5
				Idaho fescue	5
				Sandberg bluegrass	5
				Basin wildrye	5
				Western aster	5
				Shortstem lupine	5
Wahtigup	Steep Slope 12 to 16 inches	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	800	Slender wheatgrass	10
		Unfavorable	600	Nevada bluegrass	10
				Arrowleaf balsamroot	10
				Big sagebrush	10
				Antelope bitterbrush	7
				Prairie junegrass	5
Ridgecrest	Steep Slope 12 to 16 inches	Favorable	1,400	Bluebunch wheatgrass	15
		Normal	1,100	Bluegrass	10
		Unfavorable	750	Big sagebrush	10
				Antelope bitterbrush	7
				Mountain brome	5
				Idaho fescue	5
				Slender wheatgrass	5
				Needlegrass	5
				Aster	5
				Lupine	5
				Sticky geranium	5
				Saskatoon serviceberry	5
				Western snowberry	5

See footnote at end of table.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
24*:					
Kecko	Loamy 8 to 12 inches	Favorable	1,050	Big sagebrush	25
		Normal	700	Bluebunch wheatgrass	15
		Unfavorable	500	Thurber needlegrass	10
				Thickspike wheatgrass	10
				Arrowleaf balsamroot	10
				Tall green rabbitbrush	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Threetip sagebrush	5
Clems	Loamy 8 to 12 inches	Favorable	1,050	Big sagebrush	20
		Normal	700	Bluebunch wheatgrass	15
		Unfavorable	500	Thurber needlegrass	10
				Thickspike wheatgrass	10
				Arrowleaf balsamroot	10
				Tall green rabbitbrush	5
				Needleandthread	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Threetip sagebrush	5
Vining	Loamy 8 to 12 inches	Favorable	800	Bluebunch wheatgrass	15
		Normal	650	Big sagebrush	15
		Unfavorable	500	Thickspike wheatgrass	10
				Thurber needlegrass	10
				Indian ricegrass	5
				Sandberg bluegrass	5
				Needleandthread	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Antelope bitterbrush	5
				Threetip sagebrush	5
				Tall green rabbitbrush	5
25*, 26*, 27*:					
Kecko	Loamy 8 to 12 inches	Favorable	1,050	Big sagebrush	25
		Normal	700	Bluebunch wheatgrass	15
		Unfavorable	500	Thurber needlegrass	10
				Thickspike wheatgrass	10
				Arrowleaf balsamroot	10
				Tall green rabbitbrush	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Threetip sagebrush	5
Escalante	Loamy 8 to 12 inches	Favorable	1,050	Bluebunch wheatgrass	25
		Normal	700	Big sagebrush	15
		Unfavorable	500	Thurber needlegrass	10
				Arrowleaf balsamroot	10
				Douglas rabbitbrush	5
				Thickspike wheatgrass	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Threetip sagebrush	5
28 Kucera	Loamy 12 to 16 inches	Favorable	1,400	Bluebunch wheatgrass	30
		Normal	950	Idaho fescue	10
		Unfavorable	700	Needlegrass	10
				Big sagebrush	10
				Prairie junegrass	5
				Western wheatgrass	5
				Arrowleaf balsamroot	5
				Antelope bitterbrush	5

See footnote at end of table.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
29---------- Kucera	Steep Slope 12 to 16 inches	Favorable	1,000	Bluebunch wheatgrass----------	20
		Normal	800	Prairie junegrass----------	10
		Unfavorable	600	Needlegrass----------	10
				Nevada bluegrass----------	10
				Big sagebrush----------	10
				Antelope bitterbrush----------	8
				Arrowleaf balsamroot----------	7
				Idaho fescue----------	5
30, 31, 32, 33----- Lanoak	Loamy 16 to 22 inches	Favorable	2,500	Bluebunch wheatgrass----------	30
		Normal	1,600	Big sagebrush----------	15
		Unfavorable	1,000	Idaho fescue----------	10
				Prairie junegrass----------	5
				Big bluegrass----------	5
				Arrowleaf balsamroot----------	5
				Sticky geranium----------	5
				Columbia needlegrass----------	5
				Antelope bitterbrush----------	5
				Saskatoon serviceberry--------	5
				Western snowberry----------	5
34*:					
Manila----------	Loamy 16 to 22 inches	Favorable	2,000	Bluebunch wheatgrass----------	30
		Normal	1,600	Big sagebrush----------	10
		Unfavorable	1,000	Idaho fescue----------	10
				Nevada bluegrass----------	5
				Columbia needlegrass----------	5
				Prairie junegrass----------	5
				Arrowleaf balsamroot----------	5
				Antelope bitterbrush----------	5
				Saskatoon serviceberry--------	5
Dranyon.					
35*:					
McCarey----------	Loamy 12 to 16 inches	Favorable	1,500	Bluebunch wheatgrass----------	30
		Normal	1,000	Big sagebrush----------	15
		Unfavorable	700	Idaho fescue----------	5
				Sandberg bluegrass----------	5
				Nevada bluegrass----------	5
				Western wheatgrass----------	5
				Prairie junegrass----------	5
				Arrowleaf balsamroot----------	5
				Lupine----------	5
				Antelope bitterbrush----------	5
				Threetip sagebrush----------	5
Rock outcrop.					
36*:					
McDole----------	Loamy 12 to 16 inches	Favorable	1,600	Bluebunch wheatgrass----------	30
		Normal	1,100	Big sagebrush----------	10
		Unfavorable	700	Prairie junegrass----------	5
				Sandberg bluegrass----------	5
				Western wheatgrass----------	5
				Nevada bluegrass----------	5
				Lupine----------	5
				Arrowleaf balsamroot----------	5
Parehat----------	Semi-Wet Meadow	Favorable	2,500	Tufted hairgrass----------	15
		Normal	1,350	Clover----------	10
		Unfavorable	600	Sedge----------	10
				Streambank wheatgrass----------	8
				Slender wheatgrass----------	7
				Nevada bluegrass----------	5
				Cinquefoil----------	5
				Redtop----------	5
				Rush----------	5

See footnote at end of table.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
37---------- Mike	Stony 12 to 16 inches	Favorable	1,150	Bluebunch wheatgrass----------	25
		Normal	750	Big sagebrush----------	10
		Unfavorable	600	Prairie junegrass----------	5
				Sedge----------	5
				Slender wheatgrass----------	5
				Needlegrass----------	5
				Bluegrass----------	5
				Tapertip hawksbeard----------	5
				Arrowleaf balsamroot----------	5
				Antelope bitterbrush----------	5
				Western snowberry----------	5
39, 40, 41, 42, 43, 44, 45, 46--------- Neeley	Loamy 12 to 16 inches	Favorable	1,400	Bluebunch wheatgrass----------	30
		Normal	950	Big sagebrush----------	15
		Unfavorable	600	Bluegrass----------	10
				Needlegrass----------	5
				Wheatgrass----------	5
				Arrowleaf balsamroot----------	5
				Lupine----------	5
				Antelope bitterbrush----------	5
53---------- Newdale	Loamy 12 to 16 inches	Favorable	1,400	Bluebunch wheatgrass----------	20
		Normal	950	Slender wheatgrass----------	10
		Unfavorable	700	Big sagebrush----------	10
				Idaho fescue----------	5
				Nevada bluegrass----------	5
				Prairie junegrass----------	5
				Needlegrass----------	5
				Western wheatgrass----------	5
				Tapertip hawksbeard----------	5
				Antelope bitterbrush----------	5
				Arrowleaf balsamroot----------	5
59, 60, 61, 62, 63, 64, 65---------- Pocatello	Loamy 8 to 12 inches	Favorable	1,100	Bluebunch wheatgrass----------	30
		Normal	700	Big sagebrush----------	15
		Unfavorable	500	Arrowleaf balsamroot----------	10
				Thurber needlegrass----------	10
				Sandberg bluegrass----------	5
				Bottlebrush squirreltail------	5
				Threetip sagebrush----------	5
66, 67, 68, 69----- Portino	Loamy 8 to 12 inches	Favorable	1,050	Bluebunch wheatgrass----------	20
		Normal	700	Thurber needlegrass----------	15
		Unfavorable	500	Western wheatgrass----------	10
				Arrowleaf balsamroot----------	10
				Big sagebrush----------	10
				Sandberg bluegrass----------	5
				Bottlebrush squirreltail------	5
				Threetip sagebrush----------	5
				Tall green rabbitbrush--------	5
70*:					
Portino----------	Loamy 8 to 12 inches	Favorable	1,050	Bluebunch wheatgrass----------	20
		Normal	700	Thurber needlegrass----------	15
		Unfavorable	500	Western wheatgrass----------	10
				Arrowleaf balsamroot----------	10
				Big sagebrush----------	10
				Sandberg bluegrass----------	5
				Bottlebrush squirreltail------	5
				Threetip sagebrush----------	5
				Tall green rabbitbrush--------	5
Trevino----------	Shallow Loamy 8 to 12 inches	Favorable	800	Bluebunch wheatgrass----------	35
		Normal	500	Low sagebrush----------	15
		Unfavorable	250	Sandberg bluegrass----------	10
				Thurber needlegrass----------	10
				Arrowleaf balsamroot----------	5
				Tapertip hawksbeard----------	5

See footnote at end of table.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
70*: Rock outcrop.					
71, 72, 73---------- Portneuf	Loamy 8 to 12 inches	Favorable	1,200	Bluebunch wheatgrass----------	35
		Normal	700	Big sagebrush----------	25
		Unfavorable	500	Thurber needlegrass----------	10
				Sandberg bluegrass----------	5
				Prairie junegrass----------	5
				Tall green rabbitbrush--------	5
				Threetip sagebrush----------	5
74*:					
Portneuf----------	Loamy 8 to 12 inches	Favorable	1,200	Bluebunch wheatgrass----------	35
		Normal	700	Big sagebrush----------	25
		Unfavorable	500	Thurber needlegrass----------	10
				Sandberg bluegrass----------	5
				Prairie junegrass----------	5
				Tall green rabbitbrush--------	5
				Threetip sagebrush----------	5
Quincy----------	Sandy 8 to 12 inches	Favorable	750	Indian ricegrass----------	20
		Normal	500	Needleandthread----------	15
		Unfavorable	250	Thickspike wheatgrass---------	10
				Big sagebrush----------	10
				Bluebunch wheatgrass----------	5
				Thurber needlegrass----------	5
				Gray rabbitbrush----------	5
				Antelope bitterbrush----------	5
75, 76---------- Quincy	Sandy 8 to 12 inches	Favorable	750	Indian ricegrass----------	20
		Normal	500	Needleandthread----------	15
		Unfavorable	250	Thickspike wheatgrass---------	10
				Big sagebrush----------	10
				Bluebunch wheatgrass----------	5
				Thurber needlegrass----------	5
				Gray rabbitbrush----------	5
				Antelope bitterbrush----------	5
77*:					
Quincy----------	Sandy 8 to 12 inches	Favorable	750	Indian ricegrass----------	20
		Normal	500	Needleandthread----------	15
		Unfavorable	250	Thickspike wheatgrass---------	10
				Big sagebrush----------	10
				Bluebunch wheatgrass----------	5
				Thurber needlegrass----------	5
				Gray rabbitbrush----------	5
				Antelope bitterbrush----------	5
Declo----------	Loamy 8 to 12 inches	Favorable	1,000	Bluebunch wheatgrass----------	30
		Normal	700	Thurber needlegrass----------	15
		Unfavorable	500	Big sagebrush----------	15
				Sandberg bluegrass----------	5
				Arrowleaf balsamroot----------	5
				Rabbitbrush----------	5
Vining----------	Loamy 8 to 12 inches	Favorable	800	Bluebunch wheatgrass----------	15
		Normal	650	Big sagebrush----------	15
		Unfavorable	500	Thickspike wheatgrass---------	10
				Thurber needlegrass----------	10
				Indian ricegrass----------	5
				Needleandthread----------	5
				Sandberg bluegrass----------	5
				Bottlebrush squirreltail------	5
				Arrowleaf balsamroot----------	5
				Antelope bitterbrush----------	5
				Threetip sagebrush----------	5
				Tall green rabbitbrush--------	5

See footnote at end of table.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
78, 79, 80--------- Rexburg	Loamy 12 to 16 inches	Favorable Normal Unfavorable	1,600 1,300 850	Bluebunch wheatgrass---------- Big sagebrush---------- Idaho fescue---------- Prairie junegrass---------- Needlegrass---------- Arrowleaf balsamroot---------- Nevada bluegrass---------- Wheatgrass---------- Antelope bitterbrush----------	20 15 10 5 5 5 5 5 5
81*: Ricrest-----------	Steep Slope 16 to 22 inches	Favorable Normal Unfavorable	2,000 1,300 850	Bluebunch wheatgrass---------- Big sagebrush---------- Idaho fescue---------- Western snowberry---------- Nevada bluegrass---------- Mountain brome---------- Sticky geranium---------- Saskatoon serviceberry--------	25 15 10 10 5 5 5 5
Ridgecrest--------	Steep Stony Slope 16 to 22 inches	Favorable Normal Unfavorable	1,600 1,175 750	Bluebunch wheatgrass---------- Bluegrass---------- Antelope bitterbrush---------- Mountain brome---------- Idaho fescue---------- Slender wheatgrass---------- Needlegrass---------- Aster---------- Lupine---------- Sticky geranium---------- Saskatoon serviceberry-------- Western snowberry----------	15 10 7 5 5 5 5 5 5 5 5 5
83*: Rock outcrop.					
Tenno----------	Shallow Loamy 8 to 12 inches	Favorable Normal Unfavorable	800 600 350	Bluebunch wheatgrass---------- Low sagebrush---------- Nevada bluegrass---------- Thurber needlegrass---------- Sandberg bluegrass---------- Western wheatgrass---------- Sand dropseed---------- Needleandthread---------- Lupine---------- Arrowleaf balsamroot---------- Antelope bitterbrush----------	25 15 10 8 5 5 5 5 5 5 5
84*: Rock outcrop.					
Tenno----------	Steep Slopes 8 to 12 inches	Favorable Normal Unfavorable	900 700 400	Bluebunch wheatgrass---------- Low sagebrush---------- Western wheatgrass---------- Sandberg bluegrass---------- Thurber needlegrass---------- Nevada bluegrass---------- Arrowleaf balsamroot---------- Antelope bitterbrush----------	20 15 10 5 5 5 5 5
85*: Rock outcrop.					
Trevino-----------	Shallow Loamy 8 to 12 inches	Favorable Normal Unfavorable	800 500 250	Bluebunch wheatgrass---------- Low sagebrush---------- Sandberg bluegrass---------- Thurber needlegrass---------- Arrowleaf balsamroot---------- Tapertip hawksbeard----------	35 15 10 10 5 5

See footnote at end of table.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
85*:					
Portino	Loamy 8 to 12 inches	Favorable	1,050	Bluebunch wheatgrass	20
		Normal	700	Thurber needlegrass	15
		Unfavorable	500	Western wheatgrass	10
				Arrowleaf balsamroot	10
				Big sagebrush	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Threetip sagebrush	5
				Tall green rabbitbrush	5
87	Semi-Wet Meadow	Favorable	2,200	Wheatgrass	15
Schodson		Normal	1,800	Sedge	15
		Unfavorable	1,200	Bluegrass	15
				Tufted hairgrass	10
				Clover	10
				Rush	5
				Lupine	5
				Silver sagebrush	5
				Shrubby cinquefoil	5
88*:					
Sheege	Steep Stony Slopes 16 to 22 inches	Favorable	1,600	Idaho fescue	20
		Normal	1,000	Bluebunch wheatgrass	15
		Unfavorable	750	Columbia needlegrass	10
				Idaho fescue	10
				Big sagebrush	10
				Big bluegrass	10
				Saskatoon serviceberry	5
				Western snowberry	5
				Hawksbeard	5
				Sandberg bluegrass	5
				Needlegrass	5
				Slender wheatgrass	5
				Arrowleaf balsamroot	5
				Antelope bitterbrush	5
Pavohroo.					
89*:					
Trevino	Shallow Loamy 8 to 12 inches	Favorable	800	Bluebunch wheatgrass	35
		Normal	500	Low sagebrush	15
		Unfavorable	250	Sandberg bluegrass	10
				Thurber needlegrass	10
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
Portino	Loamy 8 to 12 inches	Favorable	1,050	Bluebunch wheatgrass	20
		Normal	700	Thurber needlegrass	15
		Unfavorable	500	Western wheatgrass	10
				Arrowleaf balsamroot	10
				Big sagebrush	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Threetip sagebrush	5
				Tall green rabbitbrush	5
Rock outcrop.					

See footnote at end of table.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
90*:					
Vining	Sandy 8 to 12 inches	Favorable	800	Bluebunch wheatgrass	15
		Normal	650	Big sagebrush	15
		Unfavorable	500	Thickspike wheatgrass	10
				Thurber needlegrass	10
				Indian ricegrass	5
				Needleandthread	5
				Sandberg needlegrass	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Antelope bitterbrush	5
				Threetip sagebrush	5
				Tall green rabbitbrush	5
Quincy	Sandy 8 tO 12 inches	Favorable	750	Indian ricegrass	20
		Normal	500	Needleandthread	15
		Unfavorable	250	Thickspike wheatgrass	10
				Big sagebrush	10
				Bluebunch wheatgrass	5
				Thurber needlegrass	5
				Gray rabbitbrush	5
				Antelope bitterbrush	5
Rock outcrop.					
91*:					
Vining	Loamy 8 to 12 inches	Favorable	800	Bluebunch wheatgrass	15
		Normal	650	Big sagebrush	15
		Unfavorable	500	Thickspike wheatgrass	10
				Thurber needlegrass	10
				Indian ricegrass	5
				Needleandthread	5
				Sandberg needlegrass	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Antelope bitterbrush	5
				Threetip sagebrush	5
				Tall green rabbitbrush	5
Wapi	Sandy 8 to 12 inches	Favorable	900	Indian ricegrass	20
		Normal	750	Big sagebrush	15
		Unfavorable	400	Needleandthread	15
				Bluebunch wheatgrass	10
				Thickspike wheatgrass	10
				Arrowleaf balsamroot	10
				Thurber needlegrass	5
Rock outcrop.					
92*:					
Wahtigup	Loamy 12 to 16 inches	Favorable	1,500	Bluebunch wheatgrass	25
		Normal	950	Big sagebrush	10
		Unfavorable	700	Slender wheatgrass	5
				Nevada bluegrass	5
				Prairie junegrass	5
				Needlegrass	5
				Western wheatgrass	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
				Antelope bitterbrush	5
Hondoho	Loamy 12 to 16 inches	Favorable	1,400	Bluebunch wheatgrass	25
		Normal	1,100	Big sagebrush	10
		Unfavorable	800	Prairie junegrass	5
				Sedge	5
				Wheatgrass	5
				Sandberg bluegrass	5
				Needlegrass	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5

See footnote at end of table.

TABLE 6.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site and precipitation zone	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
93*:					
Wahtigup	Steep Slope 12 to 16 inches	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	800	Slender wheatgrass	10
		Unfavorable	600	Nevada bluegrass	10
				Arrowleaf balsamroot	10
				Big sagebrush	10
				Antelope bitterbrush	7
				Prairie junegrass	5
Hondoho	Steep Slope 12 to 16 inches	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	800	Prairie junegrass	10
		Unfavorable	600	Big sagebrush	10
				Wheatgrass	5
				Sandberg bluegrass	5
				Needlegrass	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
				Phlox	5
				Antelope bitterbrush	5
95, 96, 97 Wheeler	Loamy 8 to 12 inches	Favorable	1,050	Bluebunch wheatgrass	20
		Normal	700	Big sagebrush	15
		Unfavorable	500	Thurber needlegrass	10
				Western wheatgrass	10
				Arrowleaf balsamroot	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Threetip sagebrush	5
				Tall green rabbitbrush	5
98 Wheelerville	Steep Slope 8 to 12 inches	Favorable	800	Bluebunch wheatgrass	25
		Normal	500	Big sagebrush	15
		Unfavorable	400	Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Tall green rabbitbrush	5
				Nevada bluegrass	5
				Prairie junegrass	5
				Needlegrass	5
				Antelope bitterbrush	5
100 Wheelerville	Loamy 12 to 16 inches	Favorable	1,300	Bluebunch wheatgrass	30
		Normal	950	Wheatgrass	10
		Unfavorable	650	Big sagebrush	10
				Thurber needlegrass	5
				Needleandthread	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
				Lupine	5
				Antelope bitterbrush	5
101 Wheelerville	Steep Slope 12 to 16 inches	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Big sagebrush	10
		Unfavorable	600	Needlegrass	10
				Prairie junegrass	5
				Slender wheatgrass	5
				Nevada bluegrass	5
				Idaho fescue	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
				Western snowberry	5
103 Zunhall	Semi-Wet Meadow	Favorable	2,650	Sedge	20
		Normal	2,000	Tufted hairgrass	15
		Unfavorable	1,500	Wheatgrass	15
				Rush	10
				Spike trisetum	5
				Bluegrass	5
				Redtop	5
				Clover	5

* See map unit description for the composition and behavior of the map unit.

TABLE 7.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS

[Absence of an entry means the species does not grow well on the soil]

Soil name and map symbol	Expected heights of specified trees at 20 years of age								
	Green ash	Austrian pine	Scotch pine	Blue spruce	Rocky Mt. juniper	Russian-olive	Golden willow	Siberian peashrub	Tatarian honeysuckle
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
1---------- Ammon	22	30	24	--	14	28	26	10	8
8, 9, 10, 11, 12, 13, 14, 15--------- Declo	22	34	24	--	14	28	26	10	8
18, 19, 20, 21------ Feltham	30	--	--	--	16	34	--	12	--
36*: McDole----------	22	--	21	20	14	28	26	10	8
39, 40, 41, 42, 43, 44---------- Neeley	22	--	24	20	14	28	26	10	8
47*, 48*, 49*: Neeley----------	22	--	24	20	14	28	26	10	8
Neeley variant-----	22	24	24	--	14	28	26	10	8
54, 55, 56---------- Paniogue	22	28	24	--	14	28	26	10	8
57*: Paniogue----------	22	28	24	--	14	28	26	10	8
59, 60, 61, 62, 63-- Pocatello	28	34	39	30	14	33	32	12	12
66, 67, 68, 69------ Portino	22	24	24	--	14	28	26	10	8
71, 72, 73---------- Portneuf	28	34	38	--	14	33	32	12	12
76---------- Quincy	30	30	30	30	--	25	--	12	--
77*: Vining----------	26	28	31	10	10	29	--	10	10
78---------- Rexburg	22	--	24	20	14	28	26	10	--
87---------- Schodson	20	--	--	--	12	--	--	--	7
94---------- Wheeler	22	--	24	--	14	28	26	10	8
103---------- Zunhall	19	--	--	--	12	20	19	9	7

* See map unit description for the composition and behavior of the map unit.

TABLE 8.--BUILDING SITE DEVELOPMENT

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
1---------- Ammon	Moderate: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods, low strength, frost action.
2---------- Arbone	Slight----------	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: frost action, low strength.
3---------- Arbone	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, frost action, low strength.
4---------- Arbone	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
5*: Arbone----------	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, frost action, low strength.
Hondoho----------	Moderate: slope, small stones.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.
6*: Arbone----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hondoho----------	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
7---------- Arbone variant	Moderate: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: shrink-swell, frost action, low strength.
8, 9---------- Declo	Slight----------	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: frost action, low strength.
10---------- Declo	Slight----------	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: frost action, low strength.
11, 12---------- Declo	Slight----------	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: frost action, low strength.
13---------- Declo	Slight----------	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: frost action, low strength.
14---------- Declo	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, frost action, low strength.
15---------- Declo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
16--Declo variant	Severe: large stones, cutbanks cave.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.
17*:					
Dranyon	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ricrest	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
18, 19--Feltham	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: low strength.
20--Feltham	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: low strength.
21--Feltham	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.
22*:					
Hondoho	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Arbone	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
23*:					
Hymas	Severe: depth to rock, large stones, slope.	Severe: depth to rock, large stones, slope.	Severe: depth to rock, large stones, slope.	Severe: depth to rock, large stones, slope.	Severe: depth to rock, large stones, slope.
Wahtigup	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ridgecrest	Severe: slope, depth to rock, large stones.	Severe: slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.
24*:					
Kecko	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength, frost action.
Clems	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Vining	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock, slope.	Moderate: depth to rock, frost action.
25*:					
Kecko	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, frost action.
Escalante	Slight	Slight	Slight	Slight	Moderate: frost action, low strength.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
26*:					
Kecko	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength, frost action.
Escalante	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action, low strength.
27*:					
Kecko	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength, frost action.
Escalante	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action, low strength.
28, 29 Kucera	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.
30 Lanoak	Moderate: slope.	Moderate: slope, low strength, shrink-swell.	Moderate: slope, low strength, shrink-swell.	Severe: slope.	Severe: frost action.
31, 32, 33 Lanoak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.
34*:					
Manila	Severe: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: slope, shrink-swell.	Severe: low strength, shrink-swell.
Dranyon	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
35*:					
McCarey	Severe: depth to rock.	Moderate: depth to rock, shrink-swell, low strength.	Severe: depth to rock.	Moderate: depth to rock, low strength, slope.	Moderate: depth to rock, frost action, low strength.
Rock outcrop.					
36*:					
McDole	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Severe: frost action.
Parehat	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Severe: floods.	Severe: frost action, floods.
37 Mike	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock.
38*:					
Moohoo	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
38*: Pavohroo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
39, 40--- Neeley	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, frost action.
41--- Neeley	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength, frost action.
42--- Neeley	Moderate: slope.	Moderate: low strength, slope.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength, frost action.
43--- Neeley	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, frost action.
44--- Neeley	Moderate: slope.	Moderate: low strength, slope.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength, frost action.
45, 46--- Neeley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
47*: Neeley	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, frost action.
Neeley variant	Severe: depth to rock.	Moderate: depth to rock, low strength.	Severe: depth to rock.	Moderate: depth to rock, low strength.	Moderate: depth to rock, frost action, low strength.
48*: Neeley	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength, frost action.
Neeley variant	Severe: depth to rock.	Moderate: depth to rock, low strength.	Severe: depth to rock.	Moderate: slope, depth to rock, low strength.	Moderate: depth to rock, frost action, low strength.
49*: Neeley	Moderate: slope.	Moderate: low strength, slope.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength, frost action.
Neeley variant	Severe: depth to rock.	Moderate: slope, depth to rock, low strength.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, low strength.
50--- Newdale	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: frost action, low strength.
51--- Newdale	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, frost action, low strength.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
52, 53---------- Newdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
54, 55, 56-------- Paniogue	Moderate: cutbanks cave, small stones.	Moderate: low strength.	Slight----------	Moderate: low strength.	Moderate: low strength, frost action.
57*: Paniogue---------	Moderate: cutbanks cave, small stones, slope.	Moderate: slope, low strength.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength, frost action.
58*: Pits.					
59---------- Pocatello	Slight----------	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, frost action.
60---------- Pocatello	Slight----------	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength, frost action.
61---------- Pocatello	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength, frost action.
62---------- Pocatello	Slight----------	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, frost action.
63---------- Pocatello	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength, frost action.
64, 65---------- Pocatello	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
66---------- Portino	Severe: depth to rock.	Moderate: depth to rock, low strength.	Severe: depth to rock.	Moderate: depth to rock, low strength.	Moderate: depth to rock, frost action, low strength.
67---------- Portino	Severe: depth to rock.	Moderate: depth to rock, low strength.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action, low strength.
68---------- Portino	Severe: depth to rock.	Moderate: depth to rock, low strength.	Severe: depth to rock.	Moderate: depth to rock, low strength.	Moderate: depth to rock, frost action, low strength.
69---------- Portino	Severe: depth to rock.	Moderate: depth to rock, low strength.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action, low strength.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
70*:					
Portino	Severe: depth to rock.	Moderate: depth to rock, low strength.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action, low strength.
Trevino	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop.					
71, 72--- Portneuf	Moderate: depth to rock.	Moderate: low strength.	Moderate: depth to rock, low strength.	Moderate: depth to rock, low strength.	Moderate: low strength, frost action.
73--- Portneuf	Moderate: depth to rock.	Moderate: low strength.	Moderate: depth to rock, low strength.	Moderate: slope, depth to rock, low strength.	Moderate: low strength, frost action.
74*:					
Portneuf	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength, frost action.
Quincy	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
75, 76--- Quincy	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
77*:					
Quincy	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Declo	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: frost action, low strength.
Vining	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock, slope.	Moderate: depth to rock, frost action.
78--- Rexburg	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Severe: frost action.
79, 80--- Rexburg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: frost action, slope.
81*:					
Ricrest	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ridgecrest	Severe: slope, depth to rock, large stones.	Severe: slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.
82*:					
Rock outcrop.					
83*:					
Rock outcrop.					

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
83*:					
Tenno	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
84*:					
Rock outcrop.					
Tenno	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
85*:					
Rock outcrop.					
Trevino	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.
Portino	Severe: depth to rock.	Moderate: slope, depth to rock, low strength.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.
87 Schodson	Severe: wetness. cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods. low strength, wetness.
88*:					
Sheege	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.
Pavohroo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
89*:					
Trevino	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.
Portino	Severe: depth to rock.	Moderate: slope, depth to rock, low strength.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.
Rock outcrop.					
90*:					
Vining	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock, slope.	Moderate: depth to rock, frost action.
Quincy	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Rock outcrop.					
91*:					
Vining	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock, slope.	Moderate: depth to rock, frost action.
Wapi	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop.					

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
92*, 93*: Wahtigup	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hondoho	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
94 Wheeler	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, frost action.
95, 96, 97 Wheeler	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
98 Wheelerville	Moderate: slope.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength, frost action.
99, 100, 101 Wheelerville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
102*: Xerollic Calciorthids.					
103 Zunhall	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness,	Severe: floods, frost action, low strength.

* See map unit description for the composition and behavior of the map unit.

TABLE 9.--SANITARY FACILITIES

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms used to rate soils. Absence of an entry means soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1 Ammon	Moderate: percs slowly, floods.	Moderate: seepage.	Moderate: floods.	Moderate: floods.	Good.
2 Arbone	Slight	Moderate: slope, seepage.	Slight	Slight	Good.
3 Arbone	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
4 Arbone	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
5*: Arbone	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
Hondoho	Moderate: slope.	Severe: small stones, slope.	Slight	Moderate: slope.	Poor: small stones.
6*: Arbone	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
Hondoho	Severe: slope.	Severe: small stones, slope.	Moderate: slope.	Severe: slope.	Poor: slope, small stones.
7 Arbone variant	Moderate: percs slowly.	Moderate: slope, seepage.	Moderate: floods.	Moderate: floods.	Good.
8 Declo	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
9, 10 Declo	Moderate: percs slowly.	Moderate: slope, seepage.	Slight	Slight	Good.
11 Declo	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
12, 13 Declo	Moderate: percs slowly.	Moderate: slope, seepage.	Slight	Slight	Good.
14 Declo	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
15 Declo	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
16 Declo variant	Severe: large stones.	Severe: large stones.	Severe: large stones.	Slight	Poor: large stones, area reclaim.
17*: Dranyon	Severe: percs slowly, slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
17*: Ricrest	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
18, 19, 20-- Feltham	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
21-- Feltham	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy, slope.
22*: Hondoho	Severe: slope.	Severe: small stones, slope.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
Arbone	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
23*: Hymas	Severe: slope, large stones, depth to rock.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, large stones, slope.	Severe: slope.	Poor: thin layer, large stones, slope.
Wahtigup	Severe: slope.	Severe: slope, seepage.	Severe: seepage, slope.	Severe: slope, seepage.	Poor: slope.
Ridgecrest	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock.	Severe: slope, depth to rock, large stones.	Severe: slope.	Poor: large stones, small stones, slope.
24*: Kecko	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: slope.
Clems	Moderate: slope,	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope.
Vining	Severe: depth to rock.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: large stones, thin layer.
25*, 26*: Kecko	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
Escalante	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
27*: Kecko	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: slope.
Escalante	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: seepage.	Fair: slope.
28, 29-- Kucera	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
30---------- Lanoak	Moderate: slope, percs slowly.	Severe: slope.	Slight----------	Moderate: slope.	Fair: slope.
31---------- Lanoak	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
32---------- Lanoak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
33---------- Lanoak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
34*: Manila----------	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey.
Dranyon----------	Severe: percs slowly, slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
35*: McCarey----------	Severe: percs slowly, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Fair: thin layer, too clayey, area reclaim.
Rock outcrop.					
36*: McDole----------	Slight----------	Moderate: seepage.	Slight----------	Slight----------	Good.
Parehat----------	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness, floods.	Good.
37---------- Mike	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock.	Severe: slope, depth to rock, large stones.	Severe: slope.	Poor: slope, thin layer, large stones.
38*: Moohoo----------	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock.	Severe: slope.	Poor: slope.
Pavohroo----------	Severe: slope, percs slowly, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Poor: slope.
39---------- Neeley	Slight----------	Moderate: seepage.	Slight----------	Slight----------	Good.
40, 41---------- Neeley	Slight----------	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
42---------- Neeley	Moderate: slope.	Moderate: seepage.	Slight----------	Moderate: slope.	Fair: slope.
43---------- Neeley	Slight----------	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
44---------- Neeley	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.	Fair: slope.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
45--Neeley	Severe: slope.	Severe: slope:	Moderate: slope.	Severe: slope.	Poor: slope.
46--Neeley	Severe: slope.	Severe: slope:	Severe: slope.	Severe: slope.	Poor: slope.
47*, 48*: Neeley	Slight	Moderate: slope, seepage.	Slight	Slight	Good.
Neeley variant	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Fair: thin layer, area reclaim.
49*: Neeley	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
Neeley variant	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer, area reclaim.
50--Newdale	Slight	Moderate: slope, seepage.	Slight	Slight	Good.
51--Newdale	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
52--Newdale	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
53--Newdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
54, 55, 56--Paniogue	Slight	Severe: seepage, small stones.	Severe: seepage, too sandy, small stones.	Severe: seepage.	Fair: small stones, too sandy.
57*: Paniogue	Moderate: slope.	Severe: seepage, slope, small stones.	Severe: seepage, too sandy, small stones.	Severe: seepage.	Fair: slope, small stones, too sandy.
58*: Pits.					
59, 60--Pocatello	Slight	Moderate: slope, seepage.	Slight	Slight	Good.
61--Pocatello	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
62--Pocatello	Slight	Moderate: slope, seepage.	Slight	Slight	Good.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
63---------- Pocatello	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.	Fair: slope.
64---------- Pocatello	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
65---------- Pocatello	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
66, 67, 68, 69------ Portino	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Fair: thin layer.
70*: Portino----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Fair: thin layer.
Trevino---------- Rock outcrop.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Poor: thin layer.
71---------- Portneuf	Moderate: depth to rock.	Moderate: depth to rock, seepage.	Severe: depth to rock.	Slight----------	Good.
72, 73---------- Portneuf	Moderate: depth to rock.	Moderate: slope, depth to rock, seepage.	Severe: depth to rock.	Slight----------	Good.
74*: Portneuf----------	Slight----------	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
Quincy----------	Moderate: slope.	Severe: slope, seepage.	Severe: too sandy, seepage.	Severe: seepage.	Poor: too sandy, area reclaim.
75, 76---------- Quincy	Moderate: slope.	Severe: slope, seepage.	Severe: too sandy, seepage.	Severe: seepage.	Poor: too sandy, area reclaim.
77*: Quincy----------	Moderate: slope.	Severe: slope, seepage.	Severe: too sandy, seepage.	Severe: seepage.	Poor: too sandy, area reclaim.
Declo----------	Moderate: percs slowly.	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
Vining----------	Severe: depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: large stones, thin layer.
78---------- Rexburg	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.	Fair: slope.
79---------- Rexburg	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
80---------- Rexburg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
81*: Ricrest----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
81*:					
Ridgecrest	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock.	Severe: slope, depth to rock, large stones.	Severe: slope.	Poor: large stones, small stones, slope.
82*:					
Rock outcrop.					
83*:					
Rock outcrop.					
Tenno	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, area reclaim.
84*:					
Rock outcrop.					
Tenno	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Poor: slope, depth to rock, area reclaim.
85*:					
Rock outcrop.					
Trevino	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer.
Portino	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer.
87 Schodson	Severe: wetness.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Poor: area reclaim.
88*:					
Sheege	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock, large stones.	Severe: slope.	Poor: slope, large stones.
Pavohroo	Severe: slope, percs slowly, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Poor: slope.
89*:					
Trevino	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer.
Portino	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer.
Rock outcrop.					
90*:					
Vining	Severe: depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: large stones, thin layer.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
90*:					
Quincy	Moderate: slope.	Severe: slope, seepage.	Severe: too sandy, seepage.	Severe: seepage.	Poor: too sandy, area reclaim.
Rock outcrop.					
91*:					
Vining	Severe: depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: large stones, thin layer.
Wapi	Severe: depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: thin layer, too sandy, area reclaim.
Rock outcrop.					
92*:					
Wahtigup	Severe: slope.	Severe: slope, seepage.	Severe: seepage.	Severe: slope, seepage.	Poor: slope.
Hondoho	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.	Poor: slope, small stones.
93*:					
Wahtigup	Severe: slope.	Severe: slope, seepage.	Severe: seepage, slope.	Severe: slope, seepage.	Poor: slope.
Hondoho	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
94--- Wheeler	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
95--- Wheeler	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
96, 97--- Wheeler	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
98--- Wheelerville	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
99--- Wheelerville	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
100, 101--- Wheelerville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
102*: Xerollic Calciorthids.					
103--- Zunhall	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Fair: too clayey.

* See map unit description for the composition and behavior of the map unit.

TABLE 10.--CONSTRUCTION MATERIALS

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," and "unsuited." Absence of an entry means soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
1 Ammon	Fair: low strength, frost action.	Unsuited	Unsuited	Good.
2 Arbone	Fair: frost action, low strength.	Unsuited	Unsuited	Good.
3 Arbone	Fair: frost action, low strength.	Unsuited	Unsuited	Fair: slope.
4 Arbone	Fair: slope, frost action, low strength.	Unsuited	Unsuited	Poor: slope.
5*: Arbone	Fair: frost action, low strength.	Unsuited	Unsuited	Fair: slope.
Hondoho	Fair: frost action, thin layer.	Unsuited	Poor: excess fines.	Poor: small stones.
6*: Arbone	Fair: slope, frost action, low strength.	Unsuited	Unsuited	Poor: slope.
Hondoho	Fair: slope, frost action, thin layer.	Unsuited	Poor: excess fines.	Poor: small stones, slope.
7 Arbone variant	Fair: frost action, low strength, shrink-swell.	Unsuited	Unsuited	Good.
8, 9, 10, 11, 12, 13 Declo	Fair: frost action, low strength.	Poor: excess fines.	Unsuited	Good.
14 Declo	Fair: frost action, low strength.	Poor: excess fines.	Unsuited	Fair: slope.
15 Declo	Fair: slope, frost action, low strength.	Poor: excess fines.	Unsuited	Poor: slope.
16 Declo variant	Poor: large stones, area reclaim.	Unsuited: large stones.	Unsuited: large stones.	Poor: large stones, area reclaim.
17*: Dranyon	Fair: low strength, slope, frost action.	Unsuited	Unsuited	Poor: slope, small stones.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
17*:				
Ricrest	Fair: slope, low strength, frost action.	Unsuited	Poor: excess fines.	Poor: slope.
18, 19, 20, 21, Feltham	Fair: low strength.	Poor: excess fines.	Unsuited	Poor: too sandy.
22*:				
Hondoho	Poor: slope.	Unsuited	Poor: excess fines.	Poor: small stones, slope.
Arbone	Poor: slope.	Unsuited	Unsuited	Poor: slope.
23*:				
Hymas	Poor: thin layer, slope, large stones.	Poor: excess fines, large stones.	Unsuited	Poor: large stones, slope.
Wahtigup	Poor: slope.	Unsuited	Unsuited: thin layer.	Poor: slope, small stones.
Ridgecrest	Poor: thin layer, large stones, slope.	Unsuited	Unsuited: thin layer, large stones.	Poor: slope, large stones, small stones.
24*:				
Kecko	Fair: frost action, low strength.	Unsuited	Unsuited	Fair: slope.
Clems	Fair: low strength.	Poor: excess fines.	Unsuited	Fair: slope.
Vining	Poor: thin layer.	Poor: excess fines.	Unsuited	Poor: large stones.
25*, 26*:				
Kecko	Fair: frost action, low strength.	Unsuited	Unsuited	Good.
Escalante	Fair: frost action, low strength.	Unsuited	Unsuited	Good.
27*:				
Kecko	Fair: frost action, low strength.	Unsuited	Unsuited	Fair: slope.
Escalante	Fair: frost action, low strength.	Unsuited	Unsuited	Fair: slope.
28, 29, Kucera	Poor: slope, frost action.	Unsuited	Unsuited	Poor: slope.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
30---------- Lanoak	Poor: frost action.	Unsuited----------	Unsuited----------	Fair: slope.
31---------- Lanoak	Poor: frost action.	Unsuited----------	Unsuited----------	Poor: slope.
32, 33---------- Lanoak	Poor: slope, frost action.	Unsuited----------	Unsuited----------	Poor: slope.
34*: Manila----------	Poor: low strength, shrink-swell.	Unsuited----------	Unsuited----------	Poor: too clayey.
Dranyon----------	Fair: low strength, slope, frost action.	Unsuited----------	Unsuited----------	Poor: slope, small stones.
35*: McCarey----------	Poor: thin layer.	Unsuited----------	Unsuited----------	Fair: too clayey, small stones, slope.
Rock outcrop.				
36*: McDole----------	Poor: frost action.	Unsuited----------	Unsuited----------	Good.
Parehat----------	Poor: frost action.	Unsuited----------	Unsuited----------	Poor: excess sodium.
37---------- Mike	Poor: thin layer, area reclaim.	Unsuited----------	Unsuited----------	Poor: slope, thin layer, large stones.
38*: Moohoo----------	Poor: slope.	Unsuited----------	Unsuited----------	Poor: slope, small stones.
Pavohroo----------	Poor: slope.	Unsuited----------	Unsuited----------	Poor: slope.
39, 40, 41---------- Neeley	Fair: low strength, frost action.	Unsuited----------	Unsuited----------	Good.
42---------- Neeley	Fair: low strength, frost action.	Unsuited----------	Unsuited----------	Fair: slope.
43---------- Neeley	Fair: low strength, frost action.	Unsuited----------	Unsuited----------	Good.
44---------- Neeley	Fair: low strength, frost action.	Unsuited----------	Unsuited----------	Fair: slope.
45---------- Neeley	Fair: low strength, frost action, slope.	Unsuited----------	Unsuited----------	Poor: slope.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
46--Neeley	Poor: slope.	Unsuited	Unsuited	Poor: slope.
47*, 48*: Neeley	Fair: low strength, frost action.	Unsuited	Unsuited	Good.
Neeley variant	Poor: thin layer, area reclaim.	Unsuited	Unsuited	Fair: area reclaim.
49*: Neeley	Fair: low strength, frost action.	Unsuited	Unsuited	Fair: slope.
Neeley variant	Poor: thin layer, area reclaim.	Unsuited	Unsuited	Fair: slope, area reclaim.
50--Newdale	Fair: frost action, low strength.	Unsuited	Unsuited	Good.
51--Newdale	Fair: frost action, low strength.	Unsuited	Unsuited	Fair: slope.
52--Newdale	Fair: slope, frost action, low strength.	Unsuited	Unsuited	Poor: slope.
53--Newdale	Poor: slope.	Unsuited	Unsuited	Poor: slope.
54, 55, 56--Paniogue	Poor: thin layer.	Fair: excess fines.	Good	Poor: small stones.
57*: Paniogue	Poor: thin layer.	Fair: excess fines.	Good	Poor: small stones.
58*: Pits.				
59, 60--Pocatello	Fair: low strength, frost action.	Unsuited	Unsuited	Good.
61--Pocatello	Fair: low strength, frost action.	Unsuited	Unsuited	Fair: slope.
62--Pocatello	Fair: low strength, frost action.	Unsuited	Unsuited	Good.
63--Pocatello	Fair: low strength, frost action.	Unsuited	Unsuited	Fair: slope.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
64---------- Pocatello	Fair: slope, low strength, frost action.	Unsuited----------	Unsuited----------	Poor: slope.
65---------- Pocatello	Poor: slope.	Unsuited----------	Unsuited----------	Poor: slope.
66, 67---------- Portino	Poor: thin layer, area reclaim.	Unsuited----------	Unsuited----------	Fair: large stones, thin layer, area reclaim.
68, 69---------- Portino	Poor: thin layer, area reclaim.	Unsuited----------	Unsuited----------	Good.
70*: Portino----------	Poor: thin layer, area reclaim.	Unsuited----------	Unsuited----------	Fair: large stones, thin layer, area reclaim.
Trevino----------	Poor: thin layer, area reclaim.	Unsuited----------	Unsuited----------	Fair: thin layer, large stones.
Rock outcrop.				
71, 72, 73---------- Portneuf	Fair: low strength, frost action.	Unsuited----------	Unsuited----------	Fair: area reclaim.
74*: Portneuf----------	Fair: low strength, frost action.	Unsuited----------	Unsuited----------	Fair: area reclaim.
Quincy----------	Poor: area reclaim.	Poor: excess fines.	Unsuited----------	Poor: too sandy, area reclaim.
75, 76---------- Quincy	Poor: area reclaim.	Poor: excess fines.	Unsuited----------	Poor: too sandy, area reclaim.
77*: Quincy----------	Poor: area reclaim.	Poor: excess fines.	Unsuited----------	Poor: too sandy, area reclaim.
Declo----------	Fair: frost action, low strength.	Poor: excess fines.	Unsuited----------	Good.
Vining----------	Poor: thin layer.	Poor: excess fines.	Unsuited----------	Poor: large stones.
78---------- Rexburg	Poor: frost action.	Unsuited----------	Unsuited----------	Fair: slope.
79---------- Rexburg	Poor: frost action.	Unsuited----------	Unsuited----------	Poor: slope.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
80--Rexburg	Poor: slope, frost action.	Unsuited	Unsuited	Poor: slope.
81*:				
Ricrest	Poor: slope.	Unsuited	Poor: excess fines.	Poor: slope.
Ridgecrest	Poor: thin layer, large stones, slope.	Unsuited	Unsuited: thin layer, large stones.	Poor: slope, large stones, small stones.
82*: Rock outcrop.				
83*: Rock outcrop.				
Tenno	Poor: thin layer, area reclaim.	Unsuited	Unsuited	Poor: thin layer, large stones, area reclaim.
84*: Rock outcrop.				
Tenno	Poor: thin layer, area reclaim, slope.	Unsuited	Unsuited	Poor: slope, thin layer, large stones.
85*: Rock outcrop.				
Trevino	Poor: thin layer, area reclaim.	Unsuited	Unsuited	Fair: slope, thin layer, large stones.
Portino	Poor: thin layer, area reclaim.	Unsuited	Unsuited	Fair: slope, thin layer, large stones.
87--Schodson	Fair: wetness, low strength.	Poor: excess fines.	Unsuited	Good.
88*:				
Sheege	Poor: slope, large stones, thin layer.	Unsuited: thin layer.	Unsuited: thin layer.	Poor: slope, large stones.
Pavohroo	Poor: slope.	Unsuited	Unsuited	Poor: slope.
89*:				
Trevino	Poor: thin layer, area reclaim.	Unsuited	Unsuited	Fair: slope, thin layer, large stones.
Portino	Poor: thin layer, area reclaim.	Unsuited	Unsuited	Fair: slope, thin layer, large stones.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
89*: Rock outcrop.				
90*: Vining	Poor: thin layer, area reclaim.	Poor: excess fines.	Unsuited	Poor: large stones.
Quincy	Poor: area reclaim.	Poor: excess fines.	Unsuited	Poor: too sandy, area reclaim.
Rock outcrop.				
91*: Vining	Poor: thin layer, area reclaim.	Poor: excess fines.	Unsuited	Poor: large stones.
Wapi	Poor: thin layer, area reclaim.	Unsuited: thin layer.	Unsuited	Poor: thin layer, too sandy, area reclaim.
Rock outcrop.				
92*: Wahtigup	Fair: slope, low strength, frost action.	Unsuited	Unsuited: thin layer.	Poor: slope, small stones.
Hondoho	Fair: frost action, slope, large stones.	Unsuited	Unsuited: large stones.	Poor: small stones, slope.
93*: Wahtigup	Poor: slope.	Unsuited	Unsuited: thin layer.	Poor: slope, small stones.
Hondoho	Poor: slope.	Unsuited	Unsuited: large stones.	Poor: small stones, slope.
94 Wheeler	Fair: low strength, frost action.	Unsuited	Unsuited	Fair: slope.
95 Wheeler	Fair: slope, low strength, frost action.	Unsuited	Unsuited	Poor: slope.
96, 97 Wheeler	Poor: slope.	Unsuited	Unsuited	Poor: slope.
98 Wheelerville	Fair: low strength, frost action.	Unsuited	Unsuited	Fair: slope.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
99--- Wheelerville	Fair: slope, low strength, frost action.	Unsuited---	Unsuited---	Poor: slope.
100, 101--- Wheelerville	Poor: slope.	Unsuited---	Unsuited---	Poor: slope.
102*: Xerollic Calciorthids				
103--- Zunhall	Poor: low strength, frost action.	Unsuited---	Unsuited---	Poor: excess lime.

* See map unit description for the composition and behavior of the map unit.

TABLE 11.--WATER MANAGEMENT

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. Absence of an entry means soil was not evaluated]

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
1---------- Ammon	Seepage--------	Low strength, piping, hard to pack.	Favorable------	Favorable------	Favorable------	Favorable.
2---------- Arbone	Seepage, slope.	Piping, hard to pack.	Complex slope	Complex slope	Piping, slope.	Favorable.
3, 4---------- Arbone	Seepage, slope.	Piping, hard to pack.	Complex slope	Complex slope	Complex slope, piping, erodes easily.	Erodes easily, slope.
5*, 6*: Arbone----------	Seepage, slope.	Piping, hard to pack.	Complex slope	Complex slope	Complex slope, piping, erodes easily.	Erodes easily, slope.
Hondoho----------	Slope----------	Piping---------	Complex slope	Complex slope	Complex slope, piping.	Slope.
7---------- Arbone variant	Slope----------	Piping, low strength.	Percs slowly, poor outlets.	Percs slowly---	Piping, percs slowly, slope.	Piping, percs slowly.
8---------- Declo	Seepage--------	Piping, low strength, erodes easily.	Favorable------	Favorable------	Piping---------	Favorable.
9, 10---------- Declo	Slope, seepage.	Piping, low strength, erodes easily.	Slope----------	Slope----------	Slope, piping, erodes easily.	Slope, erodes easily.
11---------- Declo	Seepage--------	Piping, low strength, erodes easily.	Favorable------	Favorable------	Piping---------	Favorable.
12, 13, 14, 15---- Declo	Slope, seepage.	Piping, low strength, erodes easily.	Slope----------	Slope----------	Slope, piping, erodes easily.	Slope, erodes easily.
16---------- Declo variant	Slope, seepage.	Large stones, hard to pack, piping.	Large stones---	Large stones---	Large stones, piping.	Large stones, piping.
17*: Dranyon----------	Slope----------	Low strength---	---	---	Complex slope, percs slowly.	Erodes easily, slope.
Ricrest----------	Seepage, slope.	Piping, low strength.	---	---	Complex slope	Slope.
18---------- Feltham	Seepage--------	Piping---------	Favorable------	Droughty, fast intake.	Too sandy, piping.	Droughty.
19, 20---------- Feltham	Slope, seepage.	Piping---------	Slope----------	Slope, droughty, fast intake.	Too sandy, piping, slope.	Droughty.
21---------- Feltham	Slope, seepage.	Piping---------	Slope----------	Slope, droughty, fast intake.	Slope, too sandy, piping.	Droughty.
22*: Hondoho----------	Slope----------	Piping---------	Complex slope	Complex slope	Complex slope, piping.	Slope.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
22*:						
Arbone	Seepage, slope.	Piping, hard to pack.	Complex slope	Complex slope	Complex slope, piping, erodes easily.	Erodes easily, slope.
23*:						
Hymas	Depth to rock, slope, seepage.	Thin layer, large stones.	---	---	Depth to rock, complex slope, large stones.	Slope, droughty, large stones.
Wahtigup	Slope, seepage.	Low strength, piping.	---	---	Complex slope, erodes easily, small stones.	Slope, erodes easily, small stones.
Ridgecrest	Slope, depth to rock.	Thin layer, piping, large stones.	---	---	Complex slope, depth to rock, large stones.	Large stones, droughty.
24*:						
Kecko	Slope, seepage.	Low strength, piping.	Slope	Slope, erodes easily.	Erodes easily, slope, piping.	Slope, erodes easily.
Clems	Seepage, slope.	Piping, low strength.	Complex slope	Complex slope, erodes easily.	Complex slope, piping, erodes easily.	Slope, erodes easily.
Vining	Seepage, depth to rock, slope.	Large stones, seepage, piping.	Depth to rock, slope.	Droughty, fast intake, slope.	Slope, depth to rock, piping.	Slope, droughty, large stones.
25*, 26*, 27*:						
Kecko	Slope, seepage.	Low strength, piping.	Slope	Slope, erodes easily.	Erodes easily, slope, piping.	Slope, erodes easily.
Escalante	Slope, seepage.	Low strength, piping.	Slope	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
28, 29---------- Kucera	Slope	Low strength, piping, hard to pack.	---	---	Slope, erodes easily.	Slope, erodes easily.
30, 31, 32, 33---- Lanoak	Slope, seepage.	Piping, low strength, hard to pack.	Complex slope	Complex slope	Complex slope, erodes easily.	Erodes easily, slope.
34*:						
Manila	Slope	Low strength, compressible.	---	---	Slope, percs slowly, erodes easily.	Slope, percs slowly, erodes easily.
Dranyon	Slope	Low strength---	---	---	Complex slope, percs slowly.	Erodes easily, slope.
35*:						
McCarey	Slope, depth to rock.	Hard to pack, piping, low strength.	Slope, depth to rock.	Slope, erodes easily, rooting depth.	Depth to rock, slope, piping.	Slope, erodes easily, rooting depth.
Rock outcrop.						
36*:						
McDole	Seepage	Piping, low strength, hard to pack.	Favorable	Favorable	Favorable	Favorable.
Parehat	Seepage	Piping, hard to pack, low strength.	Poor outlets, floods, wetness.	Wetness, floods.	Wetness	Favorable.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
37---------- Mike	Slope, depth to rock.	Piping, large stones, thin layer.	---	---	Depth to rock, large stones, slope.	Large stones, slope, rooting depth.
38*: Moohoo----------	Slope, seepage.	Low strength, piping.	---	---	Complex slope, depth to rock, slope.	Slope, piping.
Pavohroo---------	Slope----------	Low strength, piping.	---	---	Complex slope, erodes easily.	Large stones, slope, erodes easily.
39---------- Neeley	Seepage--------	Piping, hard to pack, low strength.	Favorable------	Favorable------	Piping---------	Favorable.
40, 41, 42, 43, 44, 45, 46------- Neeley	Slope, seepage.	Piping, hard to pack, low strength.	Complex slope	Complex slope, erodes easily.	Piping, complex slope, erodes easily.	Complex slope, erodes easily.
47*, 48*, 49*: Neeley----------	Slope, seepage.	Piping, hard to pack, low strength.	Complex slope	Complex slope, erodes easily.	Piping, complex slope, erodes easily.	Complex slope. erodes easily.
Neeley variant---	Slope, depth to rock, seepage.	Piping, hard to pack, low strength.	Slope, depth to rock.	Slope, erodes easily.	Slope, depth to rock, piping.	Slope, erodes easily.
50, 51, 52, 53---- Newdale	Slope, seepage.	Piping, low strength, hard to pack.	Complex slope	Complex slope, erodes easily.	Complex slope, erodes easily, piping.	Erodes easily, complex slope.
54---------- Paniogue	Slope, seepage.	Low strength, piping, seepage.	Slope----------	Slope, droughty.	Slope, piping.	Slope, droughty.
55---------- Paniogue	Seepage--------	Low strength, piping, seepage.	Favorable------	Droughty-------	Piping---------	Droughty.
56---------- Paniogue	Slope, seepage.	Low strength, piping, seepage.	Slope----------	Slope, droughty.	Slope, piping.	Slope, droughty.
57*: Paniogue---------	Slope, seepage.	Low strength, piping, seepage.	Slope----------	Slope, droughty.	Slope, piping.	Slope, droughty.
58*: Pits.						
59, 60, 61, 62, 63, 64, 65------- Pocatello	Seepage, slope.	Piping, low strength, hard to pack.	Complex slope--	Complex slope, erodes easily.	Complex slope, erodes easily.	Complex slope, erodes easily.
66, 67---------- Portino	Slope, depth to rock, seepage.	Piping, hard to pack, low strength.	Depth to rock, slope.	Slope, large stones, droughty.	Slope, depth to rock, erodes easily.	Slope, erodes easily.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
68, 69---------- Portino	Slope, depth to rock, seepage.	Piping, hard to pack, low strength.	Depth to rock, slope.	Slope, erodes easily, droughty.	Slope, depth to rock, erodes easily.	Slope, erodes easily.
70*: Portino----------	Slope, depth to rock, seepage.	Piping, hard to pack, low strength.	Depth to rock, slope.	Slope, large stones, droughty.	Slope, depth to rock, erodes easily.	Slope, erodes easily.
Trevino----------	Slope, depth to rock.	Thin layer, piping, low strength.	Slope, depth to rock.	Slope, rooting depth, droughty.	Slope, rooting depth.	Slope, rooting depth, droughty.
Rock outcrop.						
71---------- Portneuf	Depth to rock, seepage.	Piping, hard to pack, low strength.	Favorable------	Favorable------	Erodes easily. piping.	Favorable.
72, 73---------- Portneuf	Slope, depth to rock, seepage.	Piping, hard to pack, low strength.	Slope----------	Erodes easily, slope.	Slope, piping, erodes easily.	Slope, erodes easily.
74*: Portneuf---------	Slope, seepage.	Piping, hard to pack, low strength.	Slope----------	Slope, erodes easily.	Slope, erodes easily.	Slope.
Quincy----------	Slope, seepage.	Piping, erodes easily, seepage.	Complex slope	Complex slope, soil blowing, droughty.	Slope, soil blowing, erodes easily.	Droughty.
75, 76---------- Quincy	Slope, seepage.	Piping, erodes easily, seepage.	Complex slope	Complex slope, soil blowing, droughty.	Slope, soil blowing, erodes easily.	Droughty.
77*: Quincy----------	Slope, seepage.	Piping, erodes easily, seepage.	Complex slope	Complex slope, soil blowing, droughty.	Slope, soil blowing, erodes easily.	Droughty.
Declo----------	Slope, seepage.	Piping, low strength, erodes easily.	Slope----------	Slope----------	Slope, piping, erodes easily.	Slope, erodes easily.
Vining----------	Seepage, depth to rock.	Large stones, seepage, piping.	Depth to rock, slope.	Droughty, fast intake, slope.	Slope, depth to rock, piping.	Slope, droughty, large stones.
78, 79, 80-------- Rexburg	Slope, seepage.	Low strength, piping.	Complex slope	Complex slope, erodes easily.	Complex slope, piping.	Complex slope, erodes easily.
81*: Ricrest----------	Seepage, slope.	Piping, low strength.	---	---	Complex slope	Slope.
Ridgecrest-------	Slope, depth to rock.	Thin layer, piping, large stones.	---	---	Complex slope, depth to rock, large stones.	Large stones, droughty.
82*: Rock outcrop.						
83*, 84*: Rock outcrop.						
Tenno----------	Slope, depth to rock.	Thin layer, piping, large stones.	---	---	Slope, depth to rock, large stones.	Slope, rooting depth, droughty.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
85*: Rock outcrop.						
Trevino	Slope, depth to rock.	Thin layer, piping, low strength.	Slope, depth to rock.	Slope, rooting depth, droughty.	Slope, rooting depth.	Slope, rooting depth, droughty.
Portino	Slope, depth to rock, seepage.	Piping, hard to pack, low strength.	Depth to rock, slope.	Slope, large stones, droughty.	Slope, depth to rock, erodes easily.	Slope, erodes easily.
87--- Schodson	Seepage	Piping, seepage.	Wetness, cutbanks cave.	Wetness, fast intake, soil blowing.	Too sandy, wetness, piping.	Favorable.
88*: Sheege	Depth to rock, slope.	Large stones, thin layer.	---	---	Depth to rock, large stones, slope.	Large stones, rooting depth, slope.
Pavohroo	Slope	Low strength, piping.	---	---	Complex slope, erodes easily.	Large stones, slope, erodes easily.
89*: Trevino	Slope, depth to rock.	Thin layer, piping, low strength.	Slope, depth to rock.	Slope, rooting depth, droughty.	Slope, rooting depth.	Slope, rooting depth, droughty.
Portino	Slope, depth to rock, seepage.	Piping, hard to pack, low strength.	Depth to rock, slope.	Slope, large stones, droughty.	Slope, depth to rock, erodes easily.	Slope, erodes easily.
Rock outcrop.						
90*: Vining	Seepage, depth to rock.	Large stones, seepage, piping.	Depth to rock, slope.	Droughty, fast intake, slope.	Slope, depth to rock, piping.	Slope, droughty, large stones.
Quincy	Slope, seepage.	Piping, erodes easily, seepage.	Complex slope	Complex slope, soil blowing, droughty.	Slope, soil blowing, erodes easily.	Droughty.
Rock outcrop.						
91*: Vining	Seepage, depth to rock, slope.	Large stones, seepage, piping.	Depth to rock, slope.	Droughty, fast intake, slope.	Slope, depth to rock, piping.	Slope, droughty, large stones.
Wapi	Slope, depth to rock, seepage.	Thin layer, piping.	---	---	Depth to rock, slope, soil blowing.	Slope, droughty, soil blowing.
Rock outcrop.						
92*, 93*: Wahtigup	Slope, seepage.	Low strength, piping.	---	---	Complex slope, erodes easily, small stones.	Slope, erodes easily, small stones.
Hondoho	Slope	Piping, seepage.	---	---	Complex slope	Complex slope.
94, 95, 96, 97---- Wheeler	Seepage, slope.	Piping, low strength, hard to pack.	Complex slope--	Erodes easily, complex slope.	Complex slope, erodes easily.	Slope, erodes easily.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
98, 99, 100, 101--Wheelerville	Seepage, slope.	Piping, low strength, hard to pack.	Complex slope--	Complex slope, erodes easily.	Complex slope, erodes easily.	Slope, erodes easily.
102*: Xerollic Calciorthids.						
103--Zunhall	Favorable-----	Low strength, piping.	Wetness, floods.	Floods, wetness, excess lime.	Wetness--------	Wetness.

* See map unit description for the composition and behavior of the map unit.

TABLE 12.--RECREATIONAL DEVELOPMENT

[Some of the terms used in this table to describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
1--- Ammon	Moderate: dusty.	Moderate: dusty.	Moderate: slope.	Moderate: dusty.
2--- Arbone	Slight	Slight	Moderate: slope.	Slight.
3--- Arbone	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
4--- Arbone	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
5*:				
Arbone	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Hondoho	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.
6*:				
Arbone	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Hondoho	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
7--- Arbone variant	Moderate: floods, percs slowly, dusty.	Moderate: floods, percs slowly, dusty.	Moderate: slope, floods, percs slowly.	Slight.
8--- Declo	Slight	Slight	Slight	Slight.
9--- Declo	Slight	Slight	Moderate: slope.	Slight.
10--- Declo	Slight	Slight	Severe: slope.	Slight.
11--- Declo	Slight	Slight	Slight	Slight.
12--- Declo	Slight	Slight	Moderate: slope.	Slight.
13--- Declo	Slight	Slight	Severe: slope.	Slight.
14--- Declo	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
15--- Declo	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
16--- Declo variant	Severe: large stones.	Moderate: large stones.	Severe: large stones.	Moderate: large stones.
17*:				
Dranyon	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
17*:				
Ricrest	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
18--- Feltham	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy.
19--- Feltham	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.
20--- Feltham	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.
21--- Feltham	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.
22*:				
Hondoho	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Arbone	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
23*:				
Hymas	Severe: large stones, slope.	Severe: large stones, slope.	Severe: depth to rock, slope, large stones.	Severe: large stones, slope.
Wahtigup	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Ridgecrest	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
24*:				
Kecko	Moderate: dusty, slope.	Moderate: slope, dusty.	Severe: slope.	Slight.
Clems	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Vining	Slight	Slight	Severe: slope.	Slight.
25*:				
Kecko	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Slight.
Escalante	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Slight.
26*:				
Kecko	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Slight.
Escalante	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Slight.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
27*:				
Kecko	Moderate: dusty, slope.	Moderate: slope, dusty.	Severe: slope.	Slight.
Escalante	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Slight.
28, 29---- Kucera	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
30---- Lanoak	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Slight.
31---- Lanoak	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
32, 33---- Lanoak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
34*:				
Manila	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Dranyon	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
35*:				
McCarey	Moderate: dusty, percs slowly, slope.	Moderate: dusty, slope.	Severe: slope.	Moderate: dusty.
Rock outcrop.				
36*:				
McDole	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight.
Parehat	Severe: floods.	Moderate: wetness.	Moderate: wetness, floods.	Moderate: wetness.
37---- Mike	Severe: slope, large stones.	Severe: slope.	Severe: slope, depth to rock, large stones.	Severe: slope, large stones.
38*:				
Moohoo	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Pavohroo	Severe: slope.	Severe: slope.	Severe: small stones, slope.	Severe: slope.
39---- Neeley	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
40---- Neeley	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
41---- Neeley	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
42--- Neeley	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
43--- Neeley	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
44--- Neeley	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
45--- Neeley	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
46--- Neeley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
47*:				
Neeley---	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Neeley variant---	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
48*:				
Neeley---	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
Neeley variant---	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
49*:				
Neeley---	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Neeley variant---	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
50--- Newdale	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
51--- Newdale	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
52--- Newdale	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
53--- Newdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
54--- Paniogue	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Slight.
55--- Paniogue	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
56---------- Paniogue	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Slight.
57*: Paniogue----------	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Slight.
58*. Pits.				
59---------- Pocatello	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
60---------- Pocatello	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
61---------- Pocatello	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
62---------- Pocatello	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
63---------- Pocatello	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
64---------- Pocatello	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
65---------- Pocatello	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
66---------- Portino	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty, large stones.	Moderate: dusty.
67---------- Portino	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
68---------- Portino	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
69---------- Portino	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
70*: Portino----------	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
Trevino----------	Moderate: large stones, dusty.	Moderate: large stones, dusty.	Severe: slope, depth to rock.	Moderate: large stones.
Rock outcrop.				
71---------- Portneuf	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
72--- Portneuf	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
73--- Portneuf	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
74*: Portneuf---	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Quincy---	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: slope, soil blowing, too sandy.	Severe: too sandy, soil blowing.
75, 76--- Quincy	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: slope, soil blowing, too sandy.	Severe: too sandy, soil blowing.
77*: Quincy---	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: slope, soil blowing, too sandy.	Severe: too sandy, soil blowing.
Declo---	Slight---	Slight---	Moderate: slope.	Slight.
Vining---	Slight---	Slight---	Moderate: slope.	Slight.
78--- Rexburg	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Slight.
79--- Rexburg	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
80--- Rexburg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
81*: Ricrest---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ridgecrest---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
82*: Rock outcrop.				
83*: Rock outcrop.				
Tenno---	Moderate: slope, large stones, dusty.	Moderate: slope, dusty.	Severe: slope, depth to rock.	Moderate: large stones.
84*: Rock outcrop.				
Tenno---	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
85*: Rock outcrop.				
Trevino	Moderate: large stones, dusty, slope.	Moderate: large stones, dusty, slope.	Severe: slope, depth to rock.	Moderate: large stones.
Portino	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
87--- Schodson	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
88*: Sheege	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: slope, depth to rock, large stones.	Severe: slope, large stones.
Pavohroo	Severe: slope.	Severe: slope.	Severe: small stones, slope.	Severe: slope.
89*: Trevino	Moderate: large stones, dusty, slope.	Moderate: large stones, dusty, slope.	Severe: slope, depth to rock.	Moderate: large stones.
Portino	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Rock outcrop.				
90*: Vining	Slight	Slight	Moderate: slope.	Slight.
Quincy	Severe: soil blowing, too sandy.	Severe: soil blowing, too sandy.	Severe: slope, soil blowing, too sandy.	Severe: too sandy, soil blowing.
Rock outcrop.				
91*: Vining	Slight	Slight	Severe: slope.	Slight.
Wapi	Moderate: soil blowing.	Moderate: soil blowing.	Severe: depth to rock, too sandy, slope.	Moderate: too sandy, soil blowing.
Rock outcrop.				
92*: Wahtigup	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Hondoho	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
93*: Wahtigup	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Hondoho	Severe: small stones, slope.	Severe: small stones, slope.	Severe: slope, small stones.	Severe: small stones, slope.
94--- Wheeler	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
95--- Wheeler	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
96, 97--- Wheeler	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
98--- Wheelerville	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
99--- Wheelerville	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
100, 101--- Wheelerville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
102*: Xerollic Calciorthids				
103--- Zunhall	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.

* See map unit description for the composition and behavior of the map unit.

TABLE 13.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
1---------- Ammon	Good	Good	Good	---	Good	Fair	Fair	Good	---	Fair	Good.
2---------- Arbone	Fair	Fair	Good	---	Good	Poor	Very poor.	Fair	---	Very poor.	Good.
3, 4---------- Arbone	Fair	Fair	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.
5*, 6*:											
Arbone----------	Fair	Fair	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.
Hondoho----------	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
7---------- Arbone variant	Fair	Fair	Good	---	Good	Poor	Poor	Fair	---	Poor	Good.
8---------- Declo	Good	Good	Good	---	Good	Good	Fair	Good	---	Fair	---
9---------- Declo	Good	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	---
10---------- Declo	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	---
11---------- Declo	Good	Good	Good	---	Good	Good	Fair	Good	---	Fair	---
12---------- Declo	Good	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	---
13---------- Declo	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	---
14---------- Declo	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	---
15---------- Declo	Poor	Fair	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	---
16---------- Declo variant	Very poor.	Poor	Fair	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
17*:											
Dranyon----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	---
Ricrest----------	Poor	Fair	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.
18, 19, 20, 21----- Feltham	Fair	Fair	Fair	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
22*:											
Hondoho----------	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
Arbone----------	Fair	Fair	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
23*:											
Hymas	Very poor.	Very poor.	Poor	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Wahtigup	Very poor.	Very poor.	Good	---	Good	Very poor.	Very poor.	Poor	---	Very poor.	Good.
Ridgecrest	Very poor.	Very poor.	Good	---	Good	Very poor.	Very poor.	Poor	---	Very poor.	Good.
24*:											
Kecko	Poor	Poor	Fair	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
Clems	Poor	Poor	Fair	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
Vining	Very poor.	Very poor.	Fair	---	Fair	Very poor.	Very poor.	Very poor.	---	Very poor.	Fair.
25*:											
Kecko	Good	Good	Good	---	Good	Poor	Poor	Good	---	Poor	Good.
Escalante	Good	Good	Good	---	Good	Poor	Poor	Good	---	Poor	Good.
26*:											
Kecko	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
Escalante	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
27*:											
Kecko	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
Escalante	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
28--- Kucera	Poor	Poor	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.
29--- Kucera	Very poor.	Very poor.	Good	---	Good	Very poor.	Very poor.	Poor	---	Very poor.	Good.
30, 31, 32, 33--- Lanoak	Fair	Fair	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
34*:											
Manila	Poor	Fair	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.
Dranyon	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	---
35*:											
McCarey	Poor	Poor	Good	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Good.
Rock outcrop.											
36*:											
McDole	Good	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
Parehat	Good	Good	Good	---	Good	Good	Fair	Good	---	Fair	Good.
37--- Mike	Very poor.	Very poor.	Fair	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
38*:											
Moohoo	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	---
Pavohroo	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Very poor.	Good	Very poor.	---
39--- Neeley	Good	Good	Good	---	Good	Good	Fair	Good	---	Fair	Good.
40--- Neeley	Good	Good	Good	---	Good	Good	Poor	Good	---	Fair	Good.
41--- Neeley	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
42--- Neeley	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
43--- Neeley	Good	Good	Good	---	Good	Good	Poor	Good	---	Fair	Good.
44--- Neeley	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
45, 46--- Neeley	Fair	Good	Fair	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
47*:											
Neeley	Good	Good	Good	---	Good	Good	Poor	Good	---	Fair	Good.
Neeley variant	Fair	Good	Good	---	Good	Poor	Poor	Good	---	Very poor.	Good.
48*:											
Neeley	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
Neeley variant	Fair	Good	Good	---	Good	Poor	Poor	Good	---	Very poor.	Good.
49*:											
Neeley	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
Neeley variant	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
50, 51, 52, 53--- Newdale	Fair	Good	Fair	---	Fair	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
54--- Paniogue	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
55--- Paniogue	Good	Good	Good	---	Good	Fair	Fair	Good	---	Fair	Good.
56--- Paniogue	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
57*:											
Paniogue	Fair	Fair	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
58*: Pits.											
59---------- Pocatello	Good	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
60---------- Pocatello	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
61---------- Pocatello	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
62---------- Pocatello	Good	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
63---------- Pocatello	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
64, 65---------- Pocatello	Poor	Poor	Fair	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
66, 67, 68, 69----- Portino	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
70*: Portino----------	Poor	Poor	Poor	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Trevino----------	Poor	Poor	Poor	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Rock outcrop.											
71---------- Portneuf	Good	Good	Good	---	Good	Fair	Fair	Good	---	Fair	Good.
72, 73---------- Portneuf	Fair	Good	Good	---	Good	Poor	Very poor.	Good	---	Very poor.	Good.
74*: Portneuf----------	Poor	Poor	Fair	---	Fair	Poor	Very poor.	Poor	---	Very poor.	Fair.
Quincy----------	Very poor.	Very poor.	Poor	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
75---------- Quincy	Very poor.	Very poor.	Poor	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
76---------- Quincy	Fair	Good	Fair	---	Fair	Very poor.	Very poor.	Fair		Very poor.	Fair.
77*: Quincy----------	Very poor.	Very poor.	Poor	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Declo----------	Poor	Fair	Fair	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
Vining----------	Very poor.	Very poor.	Fair	---	Fair	Very poor.	Very poor.	Very poor.	---	Very poor.	Fair.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
78, 79, 80--------- Rexburg	Fair	Fair	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.
81*: Ricrest-----------	Very poor.	Very poor.	Good	---	Good	Very poor.	Very poor.	Poor	---	Very poor.	Good.
Ridgecrest--------	Very poor.	Very poor.	Good	---	Good	Very poor.	Very poor.	Poor	---	Very poor.	Good.
82*: Rock outcrop.											
83*: Rock outcrop.											
Tenno-------------	Poor	Poor	Poor	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
84*: Rock outcrop.											
Tenno-------------	Very poor.	Very poor.	Poor	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
85*: Rock outcrop.											
Trevino-----------	Poor	Poor	Poor	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Portino-----------	Poor	Poor	Poor	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
87---------- Schodson	Fair	Fair	Good	Good	Good	Good	Good	Fair	---	Good	Good.
88*: Sheege-----------	Very poor.	Very poor.	Poor	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Pavohroo----------	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Very poor.	Good	Very poor.	---
89*: Trevino-----------	Poor	Poor	Poor	---	Poor	Very	Very poor.	Poor	---	Very poor.	Poor.
Portino-----------	Poor	Poor	Poor	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
Rock outcrop.											
90*: Vining-----------	Very poor.	Very poor.	Fair	---	Fair	Very poor.	Very poor.	Very poor.	---	Very poor.	Fair.
Quincy-----------	Very poor.	Very poor.	Poor	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Rock outcrop.											

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
91*:											
Vining	Very poor.	Very poor.	Fair	---	Fair	Very poor.	Very poor.	Very poor.	---	Very poor.	Fair.
Wapi	Very poor.	Very poor.	Fair	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
Rock outcrop.											
92*:											
Wahtigup	Fair	Good	Good	---	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
Hondoho	Poor	Poor	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.
93*:											
Wahtigup	Very poor.	Very poor.	Good	---	Good	Very poor.	Very poor.	Poor	---	Very poor.	Good.
Hondoho	Very poor.	Very poor.	Good	---	Good	Very poor.	Very poor.	Poor	---	Very poor.	Good.
94 Wheeler	Fair	Fair	Good	---	Good	Very poor.	Very poor.	Fair	---	Very poor.	Fair.
95, 96 Wheeler	Poor	Poor	Fair	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
97 Wheeler	Very poor.	Very poor.	Fair	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
98, 99, 100 Wheelerville	Poor	Poor	Poor	---	Poor	Very poor.	Very poor.	Poor	---	Very poor.	Poor.
101 Wheelerville	Very poor.	Very poor.	Poor	---	Poor	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
102*: Xerollic Calciorthids.											
103 Zunhall	Fair	Fair	Good	---	Good	Fair	Fair	Fair	---	Fair	Good.

* See map unit description for the composition and behavior of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means greater than. Absence of an entry means data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1---------- Ammon	0-60	Silt loam-------	ML	A-4	0	100	100	90-100	80-95	25-35	NP-10
2, 3, 4---------- Arbone	0-60	Loam----------	ML	A-4	0-5	90-100	85-100	80-90	55-75	20-35	NP-10
5*, 6*:											
Arbone----------	0-60	Loam----------	ML	A-4	0-5	90-100	85-100	80-90	55-75	20-35	NP-10
Hondoho----------	0-12	Gravelly loam---	ML, CL-ML, GM, GM-GC	A-4	5-15	80-90	75-85	60-75	35-55	20-30	NP-10
	12-60	Very gravelly loam, very cobbly loam.	GM, GM-GC	A-2, A-1	5-55	35-55	35-50	30-45	20-35	20-35	NP-10
7---------- Arbone variant	0-11	Silt loam-------	CL, CL-ML	A-4, A-6	0	100	100	85-95	65-85	20-35	5-15
	11-33	Silty clay loam	CL	A-6	0	100	100	90-100	75-85	30-35	10-15
	33-65	Silt loam, loam	CL, CL-ML	A-4, A-6	0	100	100	85-95	65-85	25-35	5-15
8, 9, 10---------- Declo	0-11	Fine sandy loam	SM, ML	A-4	0	100	100	70-85	35-55	20-30	NP-5
	11-60	Loam, silt loam	ML	A-4	0	90-100	75-100	65-100	50-85	20-35	NP-10
11, 12, 13, 14, 15- Declo	0-11	Loam----------	ML, CL-ML	A-4	0	100	100	85-95	65-75	25-40	5-10
	11-60	Loam, silt loam	ML	A-4	0	90-100	75-100	65-100	50-85	20-35	NP-10
16---------- Declo variant	0-13	Bouldery loam, loam.	CL-ML, ML	A-4	5	95-100	95-100	85-95	60-75	20-25	NP-10
	13-60	Very bouldery loam.	SM, GM	A-4	55-75	65-75	60-70	50-65	35-50	20-25	NP-5
17*:											
Dranyon----------	0-9	Loam----------	ML, CL-ML	A-4	0-10	90-95	90-95	80-90	70-75	15-25	NP-10
	9-63	Gravelly silt loam, gravelly silty clay loam, clay loam.	CL	A-6	5-10	70-90	65-85	60-80	50-60	30-40	10-15
Ricrest----------	0-10	Loam----------	ML, CL-ML	A-4	0-5	90-100	85-95	75-90	55-70	15-25	NP-10
	10-24	Clay loam-------	CL, CL-ML	A-4, A-6	0-5	90-100	85-95	80-95	65-75	25-35	5-15
	24-62	Gravelly loam, gravelly clay loam.	CL, CL-ML, GM, GM-GC	A-4, A-2, A-6	0-10	50-80	50-75	45-70	30-60	25-35	5-15
18, 19, 20, 21----- Feltham	0-35	Loamy sand------	SM	A-2	0	100	100	60-75	20-30	---	NP
	35-63	Fine sandy loam, loam.	SM, ML	A-4	0-5	90-100	85-100	80-90	40-60	15-25	NP-5
22*:											
Hondoho----------	0-12	Gravelly loam---	ML, CL-ML, GM, GM-GC	A-4	5-15	65-80	75-85	60-75	35-55	20-30	NP-10
	12-60	Very gravelly loam, very cobbly loam.	GM, GM-GC	A-2, A-1	5-55	35-55	35-50	30-45	20-35	20-35	NP-10
Arbone----------	0-60	Loam----------	ML	A-4	0-5	90-100	85-100	80-90	55-75	20-35	NP-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
23*:											
Hymas	0-7	Extremely stony loam.	GM	A-4	20-40	55-65	50-60	40-55	35-45	20-30	NP-5
	7-18	Gravelly loam, very gravelly loam.	GM, SM	A-4, A-2	25-35	50-75	45-65	40-60	25-45	20-30	NP-5
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wahtigup	0-12	Gravelly loam---	GM, ML	A-4	5-10	60-80	60-75	50-70	35-55	20-30	NP-5
	12-24	Gravelly loam---	ML, GM	A-4, A-2	5-10	60-80	55-80	50-75	30-60	20-30	NP-5
	24-60	Cobbly loam, stony loam.	ML	A-4	25-35	80-95	80-90	65-85	50-70	20-30	NP-5
Ridgecrest	0-9	Stony loam------	GM, SM	A-4	5-15	65-75	60-70	50-65	35-50	20-25	NP-5
	9-29	Extremely stony loam.	GM, GM-GC	A-2	50-65	30-40	25-30	20-30	15-25	20-25	NP-10
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
24*:											
Kecko	0-34	Fine sandy loam, loam.	SM, ML	A-4	0	100	90-100	65-85	35-70	10-20	NP-5
	34-65	Stratified sand to silt loam.	SM, ML	A-4	0	100	90-100	65-85	35-70	10-20	NP-5
Clems	0-7	Fine sandy loam	SM	A-4	0	100	95-100	75-85	40-50	20-30	NP-5
	7-60	Fine sandy loam, sandy loam.	SM	A-4	0	100	95-100	75-100	35-50	20-30	NP-5
Vining	0-25	Fine sandy loam	SM	A-4	0-10	90-100	85-100	60-75	35-50	15-25	NP-5
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
25*, 26*, 27*:											
Kecko	0-34	Fine sandy loam, loam.	SM, ML	A-4	0	100	90-100	65-85	35-70	10-20	NP-5
	34-65	Stratified sand to silt loam.	SM, ML	A-4	0	100	90-100	65-85	35-70	10-20	NP-5
Escalante	0-6	Fine sandy loam	SM	A-4	0	100	100	70-85	35-50	15-20	NP-5
	6-60	Fine sandy loam	SM, ML	A-4	0	100	100	70-85	40-55	15-20	NP-5
28, 29 Kucera	0-65	Silt loam-------	ML	A-4	0	100	100	95-100	75-95	25-35	NP-10
30, 31, 32, 33 Lanoak	0-20	Silt loam-------	ML	A-4	0	100	100	95-100	80-95	20-25	NP-5
	20-60	Silt loam-------	CL, CL-ML	A-6, A-4	0	100	100	95-100	85-95	25-35	5-15
34*:											
Manila	0-7	Loam------------	CL-ML, CL	A-4, A-6	0	95-100	90-100	85-95	70-90	25-35	5-15
	7-60	Clay, silty clay, silty clay loam.	CL, CH	A-7	0-5	100	95-100	85-100	75-90	40-60	20-35
Dranyon	0-9	Loam------------	ML, CL-ML	A-4	0-10	90-95	90-95	80-90	70-75	15-25	NP-10
	9-63	Gravelly silt loam, gravelly silty clay loam, clay loam.	CL	A-6	5-10	70-90	65-85	60-80	50-60	30-40	10-15

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
35*:											
McCarey	0-5	Loam	ML	A-4	0-5	95-100	90-100	85-100	60-75	20-35	NP-10
	5-22	Clay loam, silty clay loam, silt loam.	CL, CL-ML	A-6, A-4	0-5	95-100	90-100	85-100	65-85	25-40	5-15
	22-35	Silt loam, loam	ML	A-4	0-5	95-100	90-100	85-100	65-75	20-35	NP-10
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
36*:											
McDole	0-12	Silt loam	ML	A-4	0	100	100	95-100	80-95	25-35	NP-10
	12-60	Silt loam	CL, CL-ML	A-4, A-6	0	100	100	95-100	80-100	20-35	5-15
Parehat	0-60	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	80-95	20-30	NP-10
37 Mike	0-5	Extremely stony silt loam.	ML	A-4	5-25	90-95	85-95	70-85	60-75	20-25	NP-5
	5-18	Loam, silt loam	ML, CL-ML	A-4	5-15	90-100	85-100	70-95	60-85	20-30	NP-10
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
38*:											
Moohoo	0-16	Gravelly loam	CL-ML, ML, GM, GM-GC	A-4	5-15	65-80	65-75	60-75	45-65	20-30	NP-10
	16-56	Very gravelly loam.	GM-GC, GM	A-2, A-4	20-30	40-60	40-55	40-55	25-40	20-30	NP-10
	56	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Pavohroo	0-14	Stony loam	ML, CL-ML	A-4	5-15	95-100	85-95	70-90	50-70	15-30	NP-10
	14-38	Loam, clay loam, gravelly clay loam.	CL, CL-ML	A-4, A-6	5-15	80-100	75-95	65-90	50-75	20-35	5-15
	38-48	Gravelly loam, loam, stony loam.	SM, ML, GM	A-4	10-30	70-95	65-85	55-80	40-60	15-30	NP-5
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
39, 40, 41, 42, 43, 44, 45, 46 Neeley	0-60	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	75-100	15-30	NP-10
47*, 48*, 49*:											
Neeley	0-60	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	75-100	15-30	NP-10
Neeley variant	0-36	Silt loam	ML, CL-ML	A-4	0-5	95-100	95-100	90-100	75-90	20-30	NP-10
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
50, 51, 52, 53 Newdale	0-71	Silt loam	CL-ML, ML	A-4	0	100	100	90-100	75-95	25-35	5-10
54	0-13	Sandy loam	SM	A-2, A-4	0	95-100	95-100	55-70	30-40	15-20	NP-5
Paniogue	13-34	Loam, silt loam, gravelly sandy loam.	ML, SM, GM	A-4	0-5	70-100	65-90	60-85	40-75	25-35	NP-10
	34-60	Stratified sand to very gravelly coarse sand.	GP, SP, SP-SM, GP-GM	A-1	0-10	40-80	30-70	15-40	0-10	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
55, 56---------- Paniogue	0-13	Loam----------	ML	A-4	0	95-100	90-100	70-95	55-80	25-35	NP-10
	13-34	Loam, silt loam, gravelly sandy loam.	ML, SM	A-4	0-5	70-100	65-90	60-85	40-75	25-35	NP-10
	34-60	Stratified sand to very gravelly coarse sand.	GP, SP, SP-SM, GP-GM	A-1	0-10	40-80	30-70	15-40	0-10	---	NP
57*:											
Paniogue----------	0-13	Loam----------	ML	A-4	0	95-100	90-100	70-95	55-80	25-35	NP-10
	13-34	Loam, silt loam, gravelly sandy loam.	ML, SM	A-4	0-5	70-100	65-90	60-85	40-75	25-35	NP-10
	34-60	Stratified sand to very gravelly coarse sand.	GP, SP, SP-SM, GP-GM	A-1	0-10	40-80	30-70	15-40	0-10	---	NP
Paniogue----------	0-13	Sandy loam------	SM	A-2, A-4	0	95-100	95-100	55-70	30-40	15-20	NP-5
	13-34	Loam, silt loam, gravelly sandy loam.	ML, SM	A-4	0-5	70-100	65-90	60-85	40-75	25-35	NP-10
	34-60	Stratified sand to very gravelly coarse sand.	GP, SP, SP-SM, GP-GM	A-1	0-10	40-80	30-70	15-40	0-10	---	NP
58*: Pits.											
59, 60, 61, 62, 63, 64, 65---------- Pocatello	0-60	Silt loam-------	ML	A-4	0	100	100	95-100	80-90	25-35	NP-10
66, 67---------- Portino	0-12	Stony loam------	ML, CL-ML	A-4	5-15	95-100	90-95	75-90	55-70	20-30	NP-10
	12-34	Silt loam-------	ML, CL-ML	A-4	0-10	100	100	90-100	75-90	20-30	NP-10
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
68, 69---------- Portino	0-12	Silt loam-------	ML, CL-ML	A-4	0-10	100	100	90-100	75-90	20-30	NP-10
	12-34	Silt loam-------	ML, CL-ML	A-4	0-10	100	100	90-100	70-90	20-30	NP-10
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
70*:											
Portino----------	0-12	Stony loam------	ML, CL-ML	A-4	5-15	95-100	90-95	75-90	55-70	20-30	NP-10
	12-34	Silt loam-------	ML, CL-ML	A-4	0-10	100	100	90-100	15-90	20-30	NP-10
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Trevino----------	0-19	Stony loam------	ML, CL-ML	A-4	5-15	90-100	85-95	75-90	55-70	20-30	NP-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
71, 72, 73--------- Portneuf	0-15	Silt loam-------	ML	A-4	0	100	100	90-100	80-95	20-25	NP-5
	15-57	Silt loam-------	CL-ML, CL	A-4, A-6	0-2	95-100	95-100	85-100	75-95	20-30	5-15
	57	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
74*:											
Portneuf	0-14	Fine sandy loam	SM	A-4	0	100	100	70-85	40-50	15-20	NP-5
	14-70	Silt loam	ML	A-4	0	100	100	95-100	75-95	15-25	NP-5
Quincy	0-60	Fine sand	SM	A-2	0	100	100	90-100	15-30	---	NP
75--Quincy	0-60	Fine sand	SM	A-2	0	100	100	90-100	15-30	---	NP
76--Quincy	0-60	Loamy fine sand	SM	A-2	0	100	100	90-100	15-30	---	NP
77*:											
Quincy	0-60	Loamy fine sand	SM	A-2	0	100	100	90-100	15-30	---	NP
Declo	0-11	Fine sandy loam	SM, ML	A-4	0	100	100	70-85	35-55	20-30	NP-5
	11-60	Loam, silt loam	ML	A-4	0	90-100	75-100	65-100	50-85	20-35	NP-10
Vining	0-5	Fine sandy loam	SM	A-4	0-10	90-100	85-100	60-75	35-50	15-25	NP-5
	5-25	Fine sandy loam, stony fine sandy loam, cobbly fine sandy loam.	SM	A-2, A-4	10-30	90-100	80-95	55-75	30-50	15-25	NP-5
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
78, 79, 80--Rexburg	0-60	Silt loam	ML, CL-ML	A-4	0	100	100	90-100	80-100	25-35	5-10
81*:											
Ricrest	0-10	Loam	ML, CL-ML	A-4	0-5	90-100	85-95	75-90	55-70	15-25	NP-10
	10-24	Clay loam	CL, CL-ML	A-4, A-6	0-5	90-100	25-95	80-95	65-75	25-35	5-15
	24-60	Gravelly loam, gravelly clay loam.	CL, CL-ML, GM, GC GM-GC	A-4, A-2, A-6	0-10	50-80	50-75	45-70	30-60	25-35	5-15
Ridgecrest	0-9	Stony loam	GM, SM	A-4	5-15	65-75	60-70	50-65	35-50	20-25	NP-5
	9-29	Extremely stony loam.	GM, GM-GC	A-2	50-65	30-40	25-30	20-30	15-25	20-25	NP-10
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
82*:											
Rock outcrop.											
83*, 84*:											
Rock outcrop.											
Tenno	0-8	Very stony loam	ML, CL-ML	A-4	10-25	80-95	75-85	65-75	50-60	20-30	NP-10
	8-17	Loam	ML, CL-ML	A-4	5-15	80-95	75-85	65-75	50-60	20-30	NP-10
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
85*:											
Rock outcrop.											
Trevino	0-19	Stony loam	ML, CL-ML	A-4	5-15	90-100	85-95	75-90	55-70	20-30	NP-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Portino	0-12	Stony loam	ML, CL-ML	A-4	5-15	95-100	90-95	75-90	55-70	20-30	NP-10
	12-34	Silt loam	ML, CL-ML	A-4	0-10	100	100	90-100	75-90	20-30	NP-10
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
87----------	0-34	Fine sandy loam	SM	A-4, A-2	0	100	100	60-85	30-50	15-20	NP-5
Schodson	34-60	Loamy coarse sand, coarse sand, loamy fine sand.	SM, SP-SM	A-2	0	95-100	90-100	45-80	5-35	---	NP
88*:											
Sheege----------	0-6	Extremely stony loam.	GM	A-1, A-2, A-4	25-65	30-65	25-60	20-50	15-40	20-35	NP-10
	6-17	Very stony loam	GM, GM-GC	A-1, A-2, A-4	25-65	30-65	25-60	20-50	15-40	20-30	NP-10
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Pavohroo----------	0-14	Stony loam------	ML, CL-ML	A-4	5-15	95-100	85-95	70-90	50-70	15-30	NP-10
	14-38	Loam, clay loam, gravelly clay loam.	CL, CL-ML	A-4, A-6	5-15	80-100	75-95	65-90	50-75	20-35	5-15
	38-48	Gravelly loam, loam, stony loam.	SM, ML, GM	A-4	10-30	70-95	65-85	55-80	40-60	15-30	NP-5
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
89*:											
Trevino----------	0-19	Stony loam------	ML, CL-ML	A-4	5-15	95-100	90-95	75-90	55-70	20-30	NP-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Portino----------	0-12	Stony loam------	ML, CL-ML	A-4	5-15	95-100	90-95	75-90	55-70	20-30	NP-10
	12-34	Silt loam-------	ML, CL-ML	A-4	0-10	100	100	90-100	70-90	20-30	NP-10
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
90*:											
Vining----------	0-25	Fine sandy loam	SM	A-4	0-10	90-100	85-95	60-75	35-50	15-25	NP-5
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Quincy----------	0-60	Loamy fine sand	SM	A-2	0	100	100	90-100	15-30	---	NP
Rock outcrop.											
91*:											
Vining----------	0-25	Fine sandy loam	SM	A-4	0-10	90-100	85-95	60-75	35-50	15-25	NP-5
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	
Wapi----------	0-19	Loamy fine sand	SM	A-2	0-5	95-100	95-100	70-90	15-30	---	NP
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
92*:											
Wahtigup----------	0-24	Gravelly loam---	GM, ML	A-4	5-10	60-80	55-80	50-70	35-55	20-30	NP-5
	24-60	Cobbly loam, stony loam.	ML	A-4	25-35	80-95	80-90	65-85	50-70	20-30	NP-5
Hondoho----------	0-16	Cobbly loam-----	GM-GC, GM	A-2, A-4	25-35	50-70	50-65	40-60	30-45	25-35	5-10
	16-60	Very cobbly sandy clay loam, very cobbly loam.	GP-GM, GM	A-2	45-60	20-50	15-45	15-35	5-20	30-40	5-15
93*:											
Wahtigup----------	0-12	Gravelly loam---	GM, ML	A-4	5-10	60-80	60-75	50-70	35-55	20-30	NP-5
	12-24	Gravelly loam---	ML, GM	A-4, A-2	5-10	60-80	55-80	50-75	30-60	20-30	NP-5
	24-60	Cobbly loam, stony loam.	ML	A-4	25-35	80-95	80-90	65-85	50-70	20-30	NP-5
Hondoho----------	0-16	Very cobbly loam	GM, GM-GC	A-2	45-60	20-50	15-45	15-40	10-30	25-35	5-10
	16-60	Very cobbly sandy clay loam, very cobbly loam.	GP-GM, GM	A-2	45-60	20-50	15-45	15-35	5-20	30-40	5-15
94, 95, 96, 97----- Wheeler	0-72	Silt loam-------	ML	A-4	0	100	100	90-100	75-90	20-25	NP-5
98, 99, 100, 101--- Wheelerville	0-60	Silt loam-------	ML	A-4	0	100	100	90-100	75-95	20-30	NP-5
102*: Xerollic Calciorthids.											
103----------	0-15	Silt loam-------	ML	A-4	0	100	100	90-100	75-90	25-35	NP-10
Zunhall	15-60	Silt loam-------	CL, ML	A-6, A-7	0	100	95-100	95-100	75-95	35-45	10-20

* See map unit description for the composition and behavior of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means greater than. The erosion tolerance factor (T) is for the entire profile. Absence of an entry means data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion		Erosion factors		Wind erodibility group
							Uncoated steel	Concrete	K	T	
	In	In/hr	In/in	pH	Mmhos/cm						
1---------- Ammon	0-60	0.6-2.0	0.19-0.21	6.6-8.4	<2	Low-------	High-----	Low------	0.49	5	4L
2, 3, 4---------- Arbone	0-60	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	High-----	Low------	0.32	5	5
5*, 6*: Arbone----------	0-60	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	High-----	Low------	0.32	5	5
Hondoho----------	0-12	0.6-2.0	0.13-0.14	7.4-8.4	<2	Low-------	Moderate	Low------	0.28	2	6
	12-60	0.6-2.0	0.08-0.11	7.9-8.4	<2	Low-------	High-----	Low------	0.17		
7---------- Arbone variant	0-11	0.6-2.0	0.17-0.18	7.4-8.4	2-4	Moderate	Moderate	Low------	0.32	5	5
	11-33	0.2-0.6	0.18-0.20	7.4-8.4	2-4	Moderate	Moderate	Low------	0.43		
	33-65	0.6-2.0	0.17-0.18	>7.9	8-16	Moderate	High-----	Low------	0.32		
8, 9, 10---------- Declo	0-11	2.0-6.0	0.16-0.18	7.4-8.4	<2	Low-------	High-----	Low------	0.28	5	3
	11-60	0.6-2.0	0.19-0.21	7.9-8.4	2-4	Low-------	High-----	Low------	0.43		
11, 12, 13, 14, 15- Declo	0-11	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low-------	High-----	Low------	0.37	5	4L
	11-60	0.6-2.0	0.19-0.21	7.9-8.4	2-4	Low-------	High-----	Low------	0.43		
16---------- Declo variant	0-13	0.6-2.0	0.15-0.17	6.6-8.4	<2	Low-------	High-----	Low------	0.37	2	5
	13-60	0.6-2.0	0.08-0.09	6.6-8.4	<2	Low-------	High-----	Low------	0.43		
17*: Dranyon----------	0-9	0.6-2.0	0.16-0.18	5.1-6.0	<2	Low-------	Moderate	Moderate	0.28	3	6
	9-63	0.2-0.6	0.16-0.18	5.6-6.5	<2	Moderate	Moderate	Moderate	0.20		
Ricrest----------	0-10	0.6-2.0	0.16-0.17	7.4-7.8	<2	Low-------	Moderate	Low------	0.32	5	6
	10-24	0.6-2.0	0.17-0.18	7.4-7.8	<2	Moderate	High-----	Low------	0.24		
	24-62	0.6-2.0	0.15-0.17	7.9-8.4	<2	Moderate	High-----	Low------	0.24		
18, 19, 20, 21----- Feltham	0-35	6.0-20	0.09-0.11	7.4-7.8	<2	Low-------	Moderate	Low------	0.20	5	2
	35.63	2.0-6.0	0.09-0.13	7.9-9.0	<2	Low-------	High-----	Low------	0.24		
22*: Hondoho----------	0-12	0.6-2.0	0.13-0.14	7.4-8.4	<2	Low-------	Moderate	Low------	0.28	2	6
	12-60	0.6-2.0	0.08-0.11	7.9-8.4	<2	Low-------	High-----	Low------	0.17		
Arbone----------	0-60	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	High-----	Low------	0.32	5	5
23*: Hymas----------	0-7	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low-------	Moderate	Low------	0.17	1	8
	7-18	0.6-2.0	0.05-0.07	7.4-8.4	<2	Low-------	Moderate	Low------	0.17		
	18	---	---	---	---	---	---	---	---		
Wahtigup----------	0-12	0.6-2.0	0.14-0.16	7.4-8.4	<2	Low-------	Moderate	Low------	0.28	3	5
	12-24	0.6-2.0	0.10-0.13	7.9-8.4	<2	Low-------	Moderate	Low------	0.28		
	24-60	0.6-2.0	0.10-0.13	7.9-8.4	<2	Low-------	Moderate-	Low------	0.20		
Ridgecrest--------	0-9	0.6-2.0	0.11-0.13	7.4-7.8	<2	Low-------	Moderate	Low------	0.28	2	8
	9-29	0.6-2.0	0.05-0.08	7.4-8.4	<2	Low-------	Moderate	Low------	0.20		
	29	---	---	---	---	---	---	---	---		
24*: Kecko----------	0-34	2.0-6.0	0.12-0.17	7.4-8.4	<2	Low-------	Moderate	Low------	0.24	5	3
	34-40	2.0-6.0	0.12-0.17	7.4-8.4	<2	Low-------	High-----	Low------	0.24		
	40-65	2.0-6.0	0.12-0.17	7.9-8.4	<2	Low-------	High-----	Low------	0.10		
Clems----------	0-7	2.0-6.0	0.13-0.15	6.6-8.4	<2	Low-------	Moderate	Low------	0.20	5	3
	7-60	2.0-6.0	0.13-0.15	6.6-8.4	<2	Low-------	High-----	Low------	0.20		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T	Wind erodibility group
	In	In/hr	In/in	pH	Mmhos/cm						
24*:											
Vining	0-25	2.0-6.0	0.10-0.14	6.6-7.8	<2	Low	Moderate	Low	0.17	2	3
	25	---	---	---	---	---	---	---	---		
25*, 26*, 27*:											
Kecko	0-34	2.0-6.0	0.12-0.17	7.4-7.8	<2	Low	Moderate	Low	0.24	5	3
	34-40	2.0-6.0	0.12-0.17	7.4-8.4	<2	Low	High	Low	0.24		
	40-65	2.0-6.0	0.12-0.17	7.9-8.4	<2	Low	High	Low	0.10		
Escalante	0-6	2.0-6.0	0.13-0.16	7.4-8.4	<2	Low	High	Moderate	0.24	5	3
	6-60	2.0-6.0	0.13-0.15	7.9-9.0	<2	Low	High	Moderate	0.24		
28, 29, Kucera	0-65	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low	High	Low	0.49	5	5
30, 31, 32, 33--- Lanoak	0-20	0.6-2.0	0.19-0.21	7.4-7.8	<2	Low	High	Low	0.55	5	5
	20-60	0.6-2.0	0.19-0.21	7.4-7.8	<2	Moderate	High	Low	0.55		
34*:											
Manila	0-7	0.6-2.0	0.16-0.18	6.1-6.5	<2	Moderate	Moderate	Low	0.43	2	6
	7-60	0.06-0.2	0.17-0.19	6.6-8.4	<2	High	High	Moderate	0.37		
Dranyon	0-9	0.6-2.0	0.16-0.18	5.6-6.0	<2	Low	Moderate	Moderate	0.28	3	6
	9-63	0.2-0.6	0.16-0.18	5.6-6.5	<2	Moderate	Moderate	Moderate	0.20		
35*:											
McCarey	0-5	0.6-2.0	0.16-0.21	7.4-7.8	<2	Low	Moderate	Low	0.49	2	6
	5-22	0.2-0.6	0.19-0.21	7.4-8.4	<2	Moderate	High	Low	0.32		
	22-35	0.6-2.0	0.16-0.21	7.9-8.4	<2	Low	High	Low	0.43		
	35	---	---	---	---	---	---	---	---		
Rock outcrop.											
36*:											
McDole	0-12	0.6-2.0	0.19-0.21	7.9-8.4	<2	Low	High	Low	0.43	5	4L
	12-60	0.6-2.0	0.19-0.21	7.9-9.0	<2	Low	High	Low	0.49		
Parehat	0-60	0.6-2.0	0.18-0.20	7.9-9.0	2-4	Low	High	Low	0.49	5	4L
37--- Mike	0-5	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low	Moderate	Low	0.43	1	8
	5-18	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low	Moderate	Low	0.43		
	18	---	---	---	---	---	---	---	---		
38*:											
Moohoo	0-16	0.6-2.0	0.13-0.15	5.1-6.5	<2	Low	Moderate	Moderate	0.37	3	5
	16-56	0.6-2.0	0.09-0.10	5.1-6.5	<2	Low	Moderate	Moderate	0.24		
	56	---	---	---	---	---	---	---	---		
Pavohroo	0-14	0.6-2.0	0.15-0.17	6.1-7.3	<2	Low	Moderate	Low	0.32	3	6
	14-38	0.2-0.6	0.15-0.17	6.1-7.3	<2	Moderate	Moderate	Low	0.37		
	38-48	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low	High	Low	0.28		
	48	---	---	---	---	---	---	---	---		
39, 40, 41, 42, 43, 44, 45, 46--- Neeley	0-60	0.6-2.0	0.19-0.21	7.4-9.0	<2	Low	High	Low	0.49	5	5
47*, 48*, 49*:											
Neeley	0-60	0.6-2.0	0.19-0.21	7.4-9.0	<2	Low	High	Low	0.49	5	5
Neeley variant	0-36	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low	High	Low	0.49	2	5
	36	---	---	---	---	---	---	---	---		
50, 51, 52, 53--- Newdale	0-71	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low	High	Low	0.43	5	5

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T	Wind erodibility group
	In	In/hr	In/in	pH	Mmhos/cm						
54----------	0-13	2.0-6.0	0.11-0.12	7.9-8.4	<2	Low-------	High-----	Low------	0.24	3	3
Paniogue	13-34	0.6-2.0	0.17-0.18	7.9-8.4	<2	Low-------	High-----	Low------	0.32		
	34-60	>6.0	0.05-0.08	7.4-8.4	<2	Low-------	Low------	Low------	0.10		
55, 56----------	0-13	0.6-2.0	0.17-0.18	7.9-8.4	<2	Low-------	High-----	Low------	0.32	3	4L
Paniogue	13-34	0.6-2.0	0.17-0.18	7.9-8.4	<2	Low-------	High-----	Low------	0.32		
	34-60	>6.0	0.05-0.08	7.4-8.4	<2	Low-------	Low------	Low------	0.10		
57*:											
Paniogue----------	0-13	0.6-2.0	0.17-0.18	7.9-8.4	<2	Low-------	High-----	Low------	0.32	3	4L
(loam)	13-34	0.6-2.0	0.17-0.18	7.9-8.4	<2	Low-------	High-----	Low------	0.32		
	34-60	>6.0	0.05-0.08	7.4-8.4	<2	Low-------	Low------	Low------	0.10		
Paniogue----------	0-13	2.0-6.0	0.11-0.12	7.9-8.4	<2	Low-------	High-----	Low------	0.24	3	3
(sandy loam)	13-34	0.6-2.0	0.17-0.18	7.9-8.4	<2	Low-------	High-----	Low------	0.32		
	34-60	>6.0	0.05-0.08	7.4-8.4	<2	Low-------	Low------	Low------	0.10		
58*:											
Pits.											
59, 60, 61, 62, 63, 64, 65----------	0-60	0.6-2.0	0.19-0.21	>7.8	<2	Low-------	High-----	Low------	0.55	5	5
Pocatello											
66, 67----------	0-12	0.6-2.0	0.17-0.19	7.4-8.4	<2	Low-------	High-----	Low------	0.49	3	5
Portino	12-34	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low-------	High-----	Low------	0.49		
68, 69----------	0-12	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low-------	High-----	Low------	0.49	3	5
Portino	12-34	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low-------	High-----	Low------	0.49		
70*:											
Portino----------	0-12	0.6-2.0	0.17-0.19	7.4-8.4	<2	Low-------	High-----	Low------	0.49	3	5
	12-34	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low-------	High-----	Low------	0.49		
Trevino----------	0-19	0.6-2.0	0.18-0.20	6.6-8.4	<2	Low-------	Moderate	Low------	0.43	1	4L
	19	---	---	---	---	----------	---------	---------	---		
Rock outcrop.											
71, 72, 73----------	0-15	0.6-2.0	0.19-0.21	7.4-8.4	<2	Low-------	Moderate	Low------	0.43	5	4L
Portneuf	15-57	0.6-2.0	0.17-0.19	7.4-9.0	2-8	Low-------	High-----	Low------	0.43		
	57	---	---	---	---	----------	---------	---------	---		
74*:											
Portneuf----------	0-14	2.0-6.0	0.11-0.13	7.4-7.8	<2	Low-------	Moderate	Low------	0.24	5	3
	14-70	0.6-2.0	0.17-0.19	7.9-9.0	2-8	Low-------	High-----	Low------	0.49		
Quincy----------	0-60	>6.0	0.06-0.09	7.4-7.8	<2	Low-------	Moderate	Low------	0.17	5	1
75, 76----------	0-60	>6.0	0.06-0.09	7.4-7.8	<2	Low-------	Moderate	Low------	0.17	5	1
Quincy											
77*:											
Quincy----------	0-60	>6.0	0.06-0.09	7.4-7.8	<2	Low-------	Moderate	Low------	0.17	5	1
Declo----------	0-11	2.0-6.0	0.16-0.18	7.4-8.4	<2	Low-------	High-----	Low------	0.28	5	3
	11-60	0.6-2.0	0.19-0.21	7.9-8.4	2-4	Low-------	High-----	Low------	0.43		
Vining----------	0-25	2.0-6.0	0.10-0.14	6.6-7.8	<2	Low-------	Moderate	Low------	0.17	2	3
	25	---	---	---	---	----------	---------	---------	---		
78, 79, 80----------	0-60	0.6-2.0	0.19-0.21	6.6-8.4	<2	Low-------	High-----	Low------	0.37	5	5
Rexburg											

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion		Erosion factors		Wind erodibility group
							Uncoated steel	Concrete	K	T	
	In	In/hr	In/in	pH	Mmhos/cm						
81*:											
Ricrest	0-10	0.6-2.0	0.16-0.17	7.4-7.8	<2	Low	Moderate	Low	0.32	5	6
	10-24	0.6-2.0	0.17-0.18	7.4-7.8	<2	Moderate	High	Low	0.24		
	24-60	0.6-2.0	0.15-0.17	7.9-8.4	<2	Moderate	High	Low	0.24		
Ridgecrest	0-9	0.6-2.0	0.11-0.13	7.4-7.8	<2	Low	Moderate	Low	0.28	2	8
	9-29	0.6-2.0	0.05-0.08	7.4-8.4	<2	Low	Moderate	Low	0.20		
	29	---	---	---	---	---	---	---	---		
82*:											
Rock outcrop.											
83*, 84*:											
Rock outcrop.											
Tenno	0-8	0.6-2.0	0.11-0.13	7.4-8.4	<2	Low	Moderate	Low	0.28	1	8
	8-17	0.6-2.0	0.11-0.13	7.4-8.4	<2	Low	High	Low	0.28		
	17	---	---	---	---	---	---	---	---		
85*:											
Rock outcrop.											
Trevino	0-19	0.6-2.0	0.18-0.20	6.6-8.4	<2	Low	Moderate	Low	0.43	1	4L
	19	---	---	---	---	---	---	---	---		
Portino	0-12	0.6-2.0	0.17-0.19	7.4-9.0	<2	Low	High	Low	0.49	3	5
	12-34	0.6-2.0	0.19-0.21	7.4-9.0	<2	Low	High	Low	0.49		
87	0-34	2.0-6.0	0.11-0.13	7.9-8.4	<2	Low	Moderate	Low	0.17	3	3
Schodson	34-60	6.0-20	0.08-0.10	7.9-8.4	<2	Low	Moderate	Low	0.17		
88*:											
Sheege	0-6	0.6-2.0	0.04-0.07	7.4-8.4	<2	Low	Moderate	Low	0.20	1	8
	6-17	0.6-2.0	0.04-0.07	7.4-8.4	<2	Low	Moderate	Low	0.20		
	17	---	---	---	---	---	---	---	---		
Pavohroo	0-14	0.6-2.0	0.15-0.17	6.1-7.3	<2	Low	Moderate	Low	0.32	3	6
	14-38	0.2-0.6	0.15-0.17	7.4-7.8	<2	Moderate	Moderate	Low	0.37		
	38-48	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low	High	Low	0.28		
	48	---	---	---	---	---	---	---	---		
89*:											
Trevino	0-19	0.6-2.0	0.18-0.20	6.6-8.4	<2	Low	Moderate	Low	0.43	1	4L
	19	---	---	---	---	---	---	---	---		
Portino	0-12	0.6-2.0	0.17-0.19	7.4-9.0	<2	Low	High	Low	0.49	3	5
	12-34	0.6-2.0	0.19-0.21	7.4-9.0	<2	Low	High	Low	0.49		
Rock outcrop.											
90*:											
Vining	0-25	2.0-6.0	0.10-0.14	6.6-7.8	<2	Low	Moderate	Low	0.17	2	3
	25	---	---	---	---	---	---	---	---		
Quincy	0-60	>6.0	0.06-0.09	6.1-8.4	<2	Low	Moderate	Low	0.17	5	1
Rock outcrop.											
91*:											
Vining	0-25	2.0-6.0	0.10-0.14	6.6-7.8	<2	Low	Moderate	Low	0.17	2	3
	25	---	---	---	---	---	---	---	---		
Wapi	0-19	6.0-20	0.06-0.08	6.6-8.4	<2	Low	High	Low	0.17	1	2
	19	---	---	---	---	---	---	---	---		
Rock outcrop.											

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T	Wind erodibility group
	In	In/hr	In/in	pH	Mmhos/cm						
92*:											
Wahtigup----------	0-24	0.6-2.0	0.10-0.13	7.9-8.4	<2	Low-------	Moderate	Low------	0.28	--	--
	24-60	0.6-2.0	0.10-0.13	7.9-8.4	<2	Low-------	Moderate-	Low------	0.28		
Hondoho-----------	0-16	0.6-2.0	0.11-0.13	6.6-8.4	<2	Low-------	High-----	Low------	0.28	2	8
	16-60	0.6-2.0	0.08-0.10	7.9-8.4	<2	Low-------	High-----	Low------	0.10		
93*:											
Wahtigup----------	0-12	0.6-2.0	0.14-0.16	7.4-8.4	<2	Low-------	Moderate	Low------	0.28	3	5
	12-24	0.6-2.0	0.10-0.13	7.9-8.4	<2	Low-------	Moderate	Low------	0.28		
	24-60	0.6-2.0	0.10-0.13	7.9-8.4	<2	Low-------	Moderate	Low------	0.20		
Hondoho-----------	0-16	0.6-2.0	0.08-0.10	6.6-8.4	<2	Low-------	High-----	Low------	0.17	2	8
	16-60	0.6-2.0	0.08-0.10	7.9-8.4	<2	Low-------	High-----	Low------	0.10		
94, 95, 96, 97----- Wheeler	0-72	0.6-2.0	0.19-0.21	7.9-8.4	<2	Low-------	High-----	Low------	0.49	5	4L
98, 99, 100, 101--- Wheelerville	0-60	0.6-2.0	0.19-0.21	7.4-9.0	<2	Low-------	High-----	Low------	0.49	5	4L
102*: Xerollic Calciorthids.											
103---------- Zunhall	0-15	0.6-2.0	0.19-0.21	7.9-9.0	2.0-4.0	Low-------	High-----	Low------	---	---	4L
	15-60	0.2-0.6	0.19-0.21	7.9-9.0	2.0-4.0	Moderate	High-----	Low------	---		

* See map unit description for the composition and behavior of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[Absence of an entry indicates the feature is not a concern. See text for descriptions of symbols and such terms as "rare," "brief," and "perched." The symbol < means less than; > means greater than]

Soil name and map symbol	Hydrologic group	Flooding			High water table		Bedrock		Cemented pan		Potential frost action
		Frequency	Duration	Months	Depth	Months	Depth	Hardness	Depth	Hardness	
					Ft		In		In		
1---------- Ammon	B	Rare--------	---	---	>6.0	---	>60	---	---	---	Moderate.
2, 3, 4---------- Arbone	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
5*, 6*:											
Arbone----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
Hondoho----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
7---------- Arbone variant	B	Rare--------	---	---	>6.0	---	>60	---	---	---	Moderate.
8, 9, 10, 11, 12, 13, 14, 15------- Declo	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
16---------- Declo variant	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
17*:											
Dranyon----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
Ricrest----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
18, 19, 20, 21---- Feltham	A	None--------	---	---	>6.0	---	>60	---	---	---	Low.
22*:											
Hondoho----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
Arbone----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
23*:											
Hymas----------	D	None--------	---	---	>6.0	---	10-20	Hard	---	---	Moderate.
Wahtigup---------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
Ridgecrest-------	B	None--------	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
24*:											
Kecko----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
Clems----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Low.
Vining----------	C	None--------	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
25*, 26*, 27*:											
Kecko----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
Escalante--------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
28, 29---------- Kucera	B	None--------	---	---	>6.0	---	>60	---	---	---	High.
30, 31, 32, 33---- Lanoak	B	None--------	---	---	>6.0	---	>60	---	---	---	High.
34*:											
Manila----------	C	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.
Dranyon----------	B	None--------	---	---	>6.0	---	>60	---	---	---	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		Bedrock		Cemented pan		Potential frost action
		Frequency	Duration	Months	Depth	Months	Depth	Hardness	Depth	Hardness	
					Ft		In		In		
35*:											
McCarey	C	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
Rock outcrop.											
36*:											
McDole	B	None	---	---	>6.0	---	>60	---	---	---	High.
Parehat	C	Occasional	Long	Apr-May	2.0-4.0	Apr-Jul	>60	---	---	---	High.
37--- Mike	D	None	---	---	>6.0	---	10-20	Hard	---	---	Moderate.
38*:											
Moohoo	B	None	---	---	>6.0	---	40-60	Hard	---	---	Moderate.
Pavohroo	B	None	---	---	>6.0	---	40-60	Hard	---	---	Moderate.
39, 40, 41, 42, 43, 44, 45, 46--- Neeley	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
47*, 48*, 49*:											
Neeley	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
Neeley variant	C	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
50, 51, 52, 53---- Newdale	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
54, 55, 56--- Paniogue	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
57*:											
Paniogue	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
58*:											
Pits.											
59, 60, 61, 62, 63, 64, 65--- Pocatello	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
66, 67, 68, 69---- Portino	C	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
70*:											
Portino	C	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
Trevino	D	None	---	---	>6.0	---	8-20	Hard	---	---	Moderate.
Rock outcrop.											
71, 72, 73--- Portneuf	B	None	---	---	>6.0	---	40-60	Hard	---	---	Moderate.
74*:											
Portneuf	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
Quincy	A	None	---	---	>6.0	---	>60	---	---	---	Low.
75, 76--- Quincy	A	None	---	---	>6.0	---	>60	---	---	---	Low.
77*:											
Quincy	A	None	---	---	>6.0	---	>60	---	---	---	Low.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		Bedrock		Cemented pan		Potential frost action
		Frequency	Duration	Months	Depth	Months	Depth	Hardness	Depth	Hardness	
					Ft		In		In		
77*:											
Declo	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
Vining	C	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
78, 79, 80--Rexburg	B	None	---	---	>6.0	---	>60	---	---	---	High.
81*:											
Ricrest	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
Ridgecrest	B	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
82*. Rock outcrop.											
83*, 84*: Rock outcrop.											
Tenno	D	None	---	---	>6.0	---	10-20	Hard	---	---	Moderate.
85*: Rock outcrop.											
Trevino	D	None	---	---	>6.0	---	8-20	Hard	---	---	Moderate.
Portino	C	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
87--Schodson	C	Rare	---	---	2.5-3.0	Apr-May	>60	---	---	---	Low.
88*:											
Sheege	D	None	---	---	>6.0	---	10-20	Hard	---	---	Moderate.
Pavohroo	B	None	---	---	>6.0	---	40-60	Hard	---	---	Moderate.
89*:											
Trevino	D	None	---	---	>6.0	---	8-20	Hard	---	---	Moderate.
Portino	C	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
Rock outcrop.											
90*:											
Vining	C	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
Quincy	A	None	---	---	>6.0	---	>60	---	---	---	Low.
Rock outcrop.											
91*:											
Vining	C	None	---	---	>6.0	---	20-40	Hard	---	---	Moderate.
Wapi	D	None	---	---	>6.0	---	10-20	Hard	---	---	Low.
Rock outcrop.											
92*, 93*:											
Wahtigup	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
Hondoho	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
94, 95, 96, 97--Wheeler	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		Bedrock		Cemented pan		Potential frost action
		Frequency	Duration	Months	Depth	Months	Depth	Hardness	Depth	Hardness	
					Ft		In		In		
98, 99, 100, 101--Wheelerville	B	None	---	---	>6.0	---	>60	---	---	---	Moderate.
102*: Xerollic Calciorthids.											
103--Zunhall	C	Occasional	Brief	Mar-Apr	1.5-2.0	Mar-Apr	>60	---	---	---	High.

* See map unit description for the composition and behavior of the map unit.

TABLE 17.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics of this taxadjunct that are outside the range of the series]

Soil name	Family or higher taxonomic class
Ammon	Coarse-silty, mixed, frigid Calciorthidic Haploxerolls
Arbone	Coarse-loamy, mixed, frigid Calcic Haploxerolls
Arbone variant	Fine loamy, mixed frigid Calcic Argixeroll
Clems	Coarse-loamy, mixed, mesic Xerollic Camborthids
Declo	Coarse-loamy, mixed, mesic Xerollic Calciorthids
Declo variant	Loamy skeletal mixed, mesic Xerollic Camborthid
Dranyon	Fine-loamy, mixed Argic Pachic Cryoborolls
Escalante	Coarse-loamy, mixed, mesic Xerollic Calciorthids
Feltham	Sandy, mixed, mesic Xeric Torriorthents
Hondoho	Loamy-skeletal, mixed, frigid Calcic Haploxerolls
Hymas	Loamy-skeletal, carbonatic, frigid Lithic Haploxerolls
Kecko	Coarse-loamy, mixed, mesic Xerollic Camborthids
Kucera	Coarse-silty, mixed, frigid Calcic Pachic Haploxerolls
Lanoak	Fine-silty, mixed, frigid Pachic Haploxerolls
Manila	Fine, montmorillonitic, frigid Typic Argixerolls
McCarey	Fine-loamy, mixed, frigid Calcic Argixerolls
McDole	Coarse-silty, mixed, mesic Torrifluventic Haploxerolls
Mike	Loamy, mixed, frigid Lithic Calcixerolls
Moohoo	Loamy-skeletal, mixed Entic Cryumbrepts
Neeley	Coarse-silty, mixed, mesic Calciorthidic Haploxerolls
Neeley variant	Coarse silty mixed mesic Calciorthidic Haploxerolls
Newdale	Coarse-silty, mixed, frigid Calciorthidic Haploxerolls
*Paniogue	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Xerollic Camborthids
Parehat	Fine-silty, mixed, mesic Fluvaquentic Haploxerolls
Pavohroo	Fine-loamy, mixed Pachic Cryoborolls
Pocatello	Coarse-silty, mixed (calcareous), mesic Xeric Torriorthents
Portino	Coarse-silty, mixed, mesic Xerollic Calciorthids
Portneuf	Coarse-silty, mixed, mesic Durixerollic Calciorthids
Quincy	Mixed, mesic Xeric Torripsamments
Rexburg	Coarse-silty, mixed, frigid Calcic Haploxerolls
Ricrest	Fine-loamy, mixed, frigid Calcic Pachic Haploxerolls
Ridgecrest	Loamy-skeletal, carbonatic, frigid Calcic Haploxerolls
Schodson	Coarse-loamy, mixed, nonacid, mesic Aquic Xerorthents
Sheege	Loamy-skeletal, carbonatic Cryic Lithic Rendolls
Tenno	Loamy, mixed, frigid Lithic Xerollic Camborthids
Trevino	Loamy, mixed, mesic Lithic Xerollic Camborthids
Vining	Coarse-loamy, mixed, mesic Xerollic Camborthids
Wahtigup	Fine-loamy, mixed, frigid Calciorthidic Haploxerolls
Wapi	Mixed, mesic, Lithic Xeropsamments.
Wheeler	Coarse-silty, mixed (calcareous), mesic Xeric Torriorthents
Wheelerville	Coarse-silty, mixed (calcareous), frigid Durorthidic Xeric Torriorthents
Zunhall	Fine-silty, carbonatic, frigid Aquic Calcixerolls

*Taxadjunct to the series.

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U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

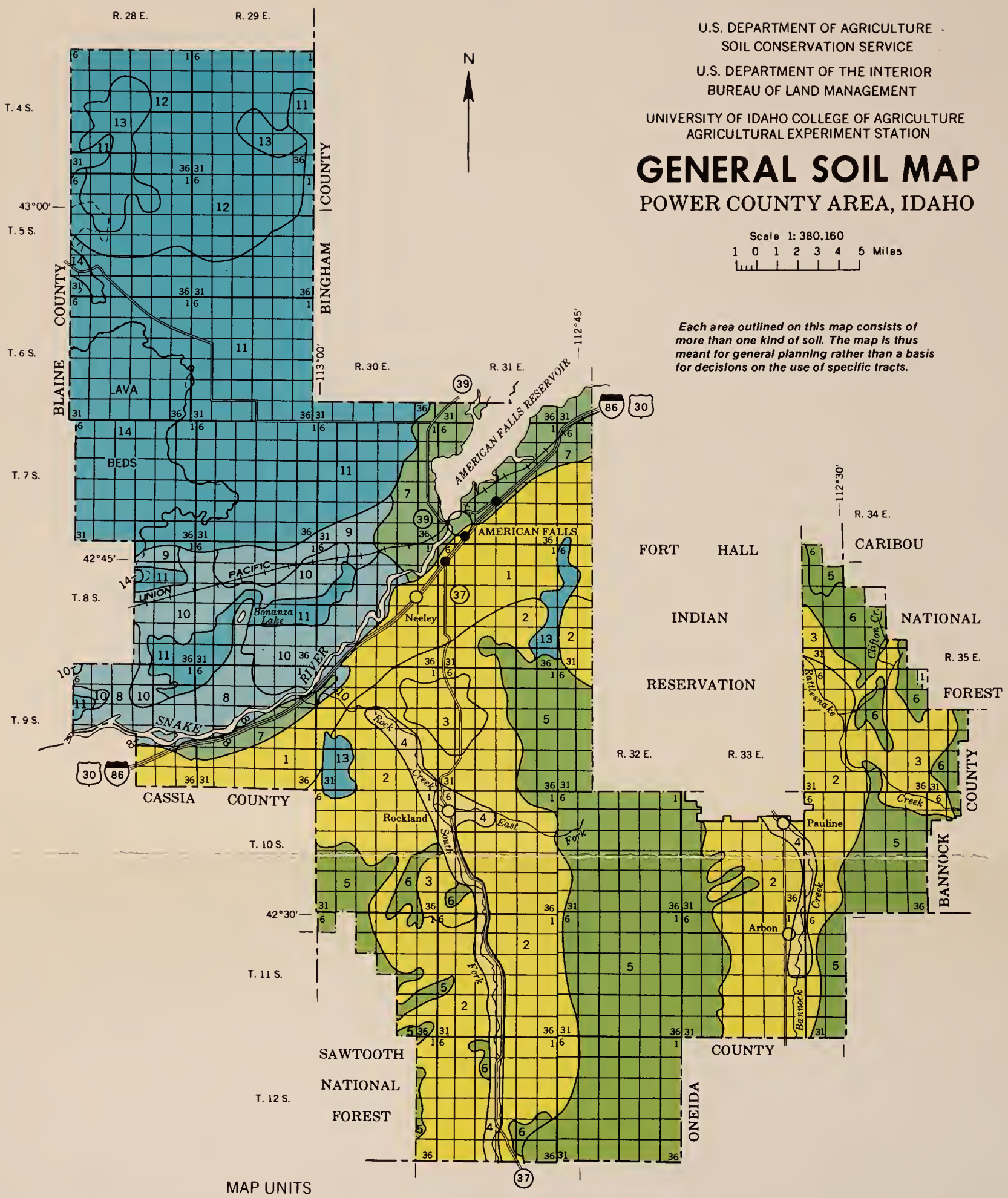
UNIVERSITY OF IDAHO COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

POWER COUNTY AREA, IDAHO

Scale 1: 380,160
1 0 1 2 3 4 5 Miles

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



MAP UNITS

NEARLY LEVEL TO VERY STEEP, WELL DRAINED SOILS ON HILLS, TERRACES, PLAINS, AND RIDGES

1 Neeley-Wheeler-Pocatello: Very deep, nearly level to very steep, well drained soils that formed in thick loess; on hills and terraces

2 Newdale-Wheelerville: Very deep, nearly level to very steep, well drained soils that formed in thick loess; on plains and terraces

3 Newdale-Rexburg-Lanoak: Very deep, nearly level to very steep, well drained soils that formed in thick loess; on hills, ridges, and plains

NEARLY LEVEL AND VERY GENTLY SLOPING, WELL DRAINED AND SOMEWHAT POORLY DRAINED SOILS ON ALLUVIAL FANS, FOOT SLOPES, AND BOTTOM LAND

4 Ammon-Zunhall: Very deep, nearly level and very gently sloping, well drained and somewhat poorly drained soils that formed in alluvium; on alluvial fans, foot slopes, and bottom land

STEEP AND VERY STEEP, WELL DRAINED SOILS ON MOUNTAIN RIDGES AND FOOT SLOPES

5 Ridgecrest-Pavohroo-Ricrest: Moderately deep to very deep, steep and very steep, well drained soils that formed in residuum and colluvium derived from limestone; on mountain ridges and foot slopes

6 Wahtigup-Hondoho: Very deep, steep and very steep, well drained soils that formed in colluvium and residuum derived from quartzite and sandstone; on mountain foot slopes

NEARLY LEVEL TO STRONGLY SLOPING, WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED SOILS ON TERRACES AND ALLUVIAL FANS

7 Delco-Feltham-Paniogue: Very deep, nearly level to strongly sloping, well drained and somewhat excessively drained soils that formed in alluvium; on terraces and alluvial fans

NEARLY LEVEL TO HILLY, WELL DRAINED AND EXCESSIVELY DRAINED SOILS AND ROCK OUTCROP; ON BASALT PLAINS, ALLUVIAL FANS, AND TERRACES

8 Kecko-Escalante-Clems: Very deep, nearly level to hilly, well drained soils that formed in alluvium and windblown material; on basalt plains, alluvial fans, and terraces

9 Quincy-Portneuf: Very deep and deep, nearly level to hilly, excessively drained and well drained soils that formed in sandy windblown material and in loess; on basalt plains and terraces

10 Quincy-Vining-Rock outcrop: Very deep and moderately deep, nearly level to rolling, excessively drained and well drained soils that formed in windblown material and Rock outcrop; on basalt plains

NEARLY LEVEL TO VERY STEEP, WELL DRAINED SOILS, AND ROCK OUTCROP; ON BASALT PLAINS

11 Portino-Trevino-Portneuf: Shallow to deep, nearly level to hilly, well drained soils that formed in loess; on basalt plains

12 McCarey-Rock outcrop: Moderately deep, nearly level to rolling, well drained soils that formed in loess and in residuum derived from basalt; and Rock outcrop; on basalt plains

13 Rock outcrop-Tenno: Rock outcrop, and shallow, nearly level to very steep, well drained soils that formed in loess and in residuum derived from basalt; on basalt plains

14 Rock outcrop: Nearly level to very steep, exposed lava flows and rock outcrop

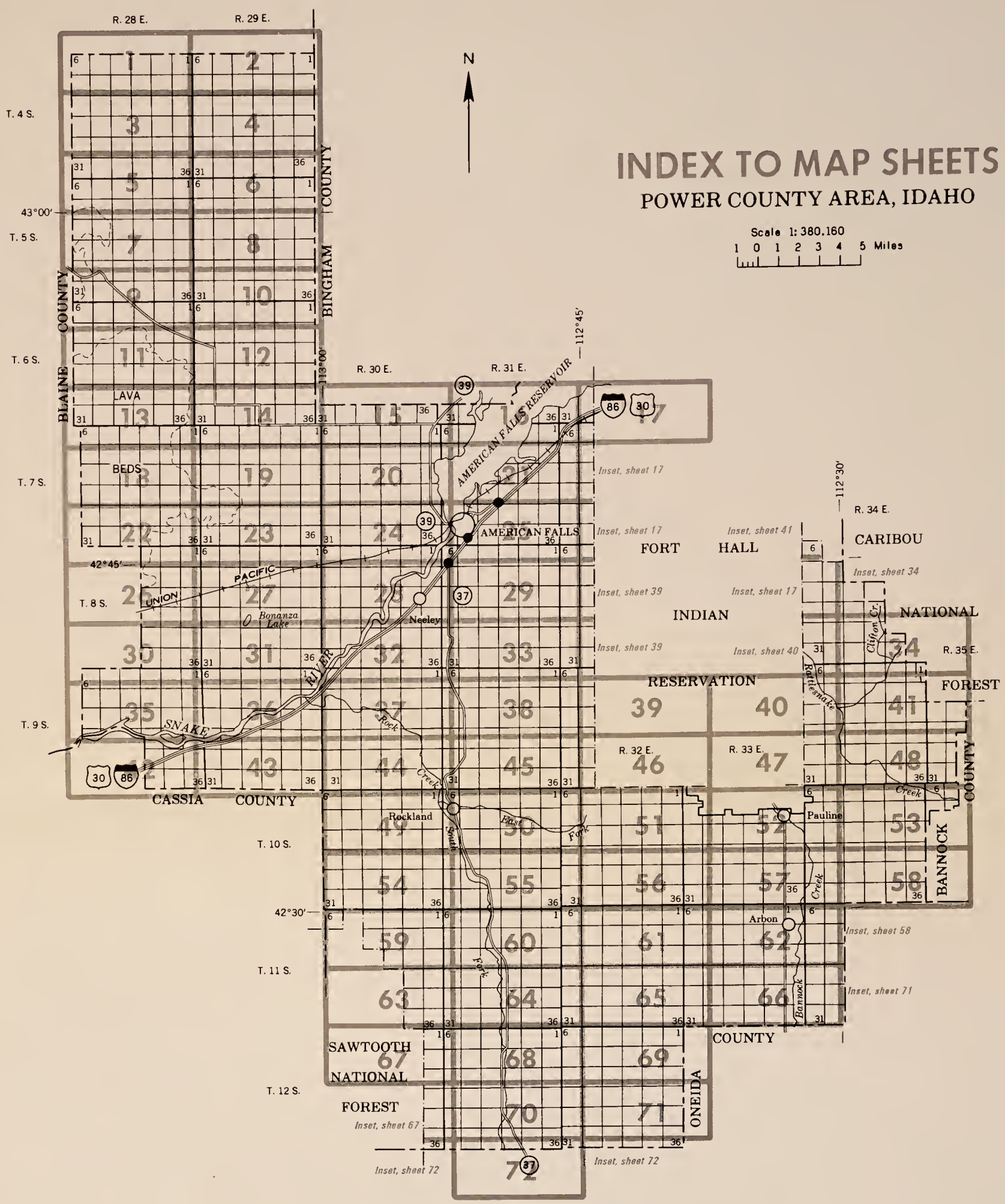
Compiled 1979

INDEX TO MAP SHEETS

POWER COUNTY AREA, IDAHO

Scale 1: 380,160

1 0 1 2 3 4 5 Miles



SOIL LEGEND

SYMBOL	NAME
1	Ammon silt loam, 0 to 3 percent slopes
2	Arbone loam, 0 to 4 percent slopes
3	Arbone loam, 4 to 12 percent slopes
4	Arbone loam, 12 to 20 percent slopes
5	Arbone-Hondoho association, rolling*
6	Arbone-Hondoho association, hilly*
7	Arbone Variant silt loam, 0 to 4 percent slopes
8	Declo fine sandy loam, 0 to 2 percent slopes
9	Declo fine sandy loam, 2 to 4 percent slopes
10	Declo fine sandy loam, 4 to 8 percent slopes
11	Declo loam, 0 to 2 percent slopes
12	Declo loam, 2 to 4 percent slopes
13	Declo loam, 4 to 8 percent slopes
14	Declo loam, 8 to 12 percent slopes
15	Declo loam, 12 to 20 percent slopes
16	Declo Variant bouldery loam, 2 to 4 percent slopes
17	Dranyon-Ricrest association, steep*
18	Feltham loamy sand, 0 to 2 percent slopes
19	Feltham loamy sand, 2 to 4 percent slopes
20	Feltham loamy sand, 4 to 8 percent slopes
21	Feltham loamy sand, 8 to 12 percent slopes
22	Hondoho-Arbone complex, steep*
23	Hymas-Wahtigup-Ridgecrest complex, very steep*
24	Kecko-Clems-Vining association, undulating*
25	Kecko-Escalante complex, 2 to 4 percent slopes
26	Kecko-Escalante complex, 4 to 8 percent slopes
27	Kecko-Escalante complex, 8 to 12 percent slopes
28	Kucera silt loam, steep*
29	Kucera silt loam, very steep*
30	Lanoak silt loam, 4 to 12 percent slopes
31	Lanoak silt loam, 12 to 20 percent slopes
32	Lanoak silt loam, 20 to 30 percent slopes
33	Lanoak silt loam, 30 to 45 percent slopes
34	Manila-Dranyon association, hilly*
35	McCarey-Rock outcrop complex, undulating*
36	McDole-Parehat complex, 0 to 3 percent slopes
37	Mike extremely stony silt loam, steep*
38	Moohoo-Pavohroo complex, very steep*
39	Neeley silt loam, 0 to 2 percent slopes
40	Neeley silt loam, 2 to 4 percent slopes
41	Neeley silt loam, 4 to 8 percent slopes
42	Neeley silt loam, 8 to 12 percent slopes
43	Neeley silt loam, 0 to 4 percent slopes*
44	Neeley silt loam, 4 to 12 percent slopes*
45	Neeley silt loam, 12 to 20 percent slopes*
46	Neeley silt loam, 20 to 30 percent slopes*
47	Neeley-Neeley Variant complex, 2 to 4 percent slopes
48	Neeley-Neeley Variant complex, 4 to 8 percent slopes
49	Neeley-Neeley Variant complex, 8 to 12 percent slopes
50	Newdale silt loam, 0 to 4 percent slopes
51	Newdale silt loam, 4 to 12 percent slopes
52	Newdale silt loam, 12 to 20 percent slopes
53	Newdale silt loam, 20 to 30 percent slopes
54	Paniogue sandy loam, 2 to 4 percent slopes
55	Paniogue loam, 0 to 2 percent slopes
56	Paniogue loam, 2 to 4 percent slopes
57	Paniogue complex, 4 to 12 percent slopes
58	Pits*
59	Pocatello silt loam, 2 to 4 percent slopes
60	Pocatello silt loam, 4 to 8 percent slopes
61	Pocatello silt loam, 8 to 12 percent slopes
62	Pocatello silt loam, 0 to 4 percent slopes*
63	Pocatello silt loam, 4 to 12 percent slopes*
64	Pocatello silt loam, 12 to 20 percent slopes*
65	Pocatello silt loam, 20 to 30 percent slopes*
66	Portino stony loam, 2 to 4 percent slopes
67	Portino stony loam, 4 to 8 percent slopes
68	Portino silt loam, 2 to 4 percent slopes
69	Portino silt loam, 4 to 8 percent slopes
70	Portino-Trevino-Rock outcrop complex, rolling*
71	Portneuf silt loam, bedrock substratum, 0 to 2 percent slopes
72	Portneuf silt loam, bedrock substratum, 2 to 4 percent slopes
73	Portneuf silt loam, bedrock substratum, 4 to 8 percent slopes
74	Portneuf-Quincy complex, rolling*
75	Quincy fine sand, rolling*
76	Quincy loamy fine sand, 4 to 12 percent slopes
77	Quincy-Declo-Vining association, rolling*
78	Rexburg silt loam, 4 to 12 percent slopes
79	Rexburg silt loam, 12 to 20 percent slopes
80	Rexburg silt loam, 20 to 30 percent slopes
81	Ricrest-Ridgecrest complex, very steep*
82	Rock outcrop*
83	Rock outcrop-Tenno complex, rolling*
84	Rock outcrop-Tenno complex, very steep*
85	Rock outcrop-Trevino-Portino complex, rolling*
86	Rock outcrop and Torriorthents*
87	Schodson fine sandy loam, 0 to 3 percent slopes
88	Sheege-Pavohroo association, very steep*
89	Trevino-Portino-Rock outcrop complex, rolling*
90	Vining-Quincy-Rock outcrop complex, undulating*
91	Vining Wapi-Rock outcrop complex, undulating*
92	Wahtigup-Hondoho complex, steep*
93	Wahtigup-Hondoho complex, very steep*
94	Wheeler silt loam, 4 to 12 percent slopes
95	Wheeler silt loam, 12 to 20 percent slopes
96	Wheeler silt loam, 20 to 30 percent slopes
97	Wheeler silt loam, 30 to 60 percent slopes
98	Wheelerville silt loam, 4 to 12 percent slopes
99	Wheelerville silt loam, 12 to 20 percent slopes
100	Wheelerville silt loam, 20 to 30 percent slopes
101	Wheelerville silt loam, 30 to 60 percent slopes
102	Xerollic Calciorthids, steep*
103	Zunhall silt loam, 0 to 3 percent slopes

Broadly defined units.

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool — Davis Airstrip; FLOOD POOL LINE

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Poor motor road

ROAD EMBLEMS & DESIGNATIONS

- Interstate — 79
- Federal — 410
- State — 52
- County, farm or ranch — 378

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small — water; w

PITS

- Gravel pit — G.P.
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — GAS
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) — CANAL
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial — water; w
- Intermittent — int; i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — SvE 107

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown) — S

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot — 0

POWER COUNTY AREA, IDAHO — SHEET NUMBER 1

1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24000

N

(2)

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 2

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotographs by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 3

3

N

Scale 1:24000

1 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

5,000-foot grid ticks based on state coordinate system. Land division corners : if shown are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

(4)

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 4

2 Miles 1 ¾ ½ ¼ 0 1

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

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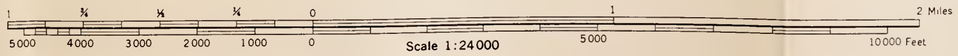
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 5

5

N



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5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 6

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This map was compiled on 1975 and 1976 U.S. Department of The Interior Geological Survey orthophotography by the U.S. Department of Agriculture - Soil Conservation Service and cooperating agencies

5,000 foot grid ticks based on state coordinate system. Land division corners - if shown are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 7

7

N

1 ¾ ½ ¼ 0 1 2 Miles

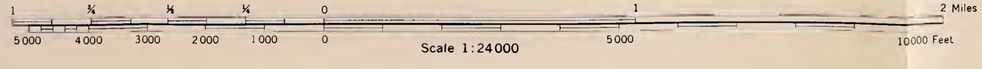
5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

8

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 8



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5,000-foot grid ticks based on state coordinate system. Land division corners - if shown, are approximately positioned

N

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10 000 Feet

Scale 1:24000

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

(10)

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 10

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This map was compiled on 1979 and 1976 U.S. Department of the Interior geological Survey photogrammetric data by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

5 000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 11

11

N

1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24000

5,000 foot grid ticks based on state coordinate system | and division corners if shown are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

(12)

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 12

1 ¾ ½ ¼ 0 1 2 Miles

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Scale 1:24000

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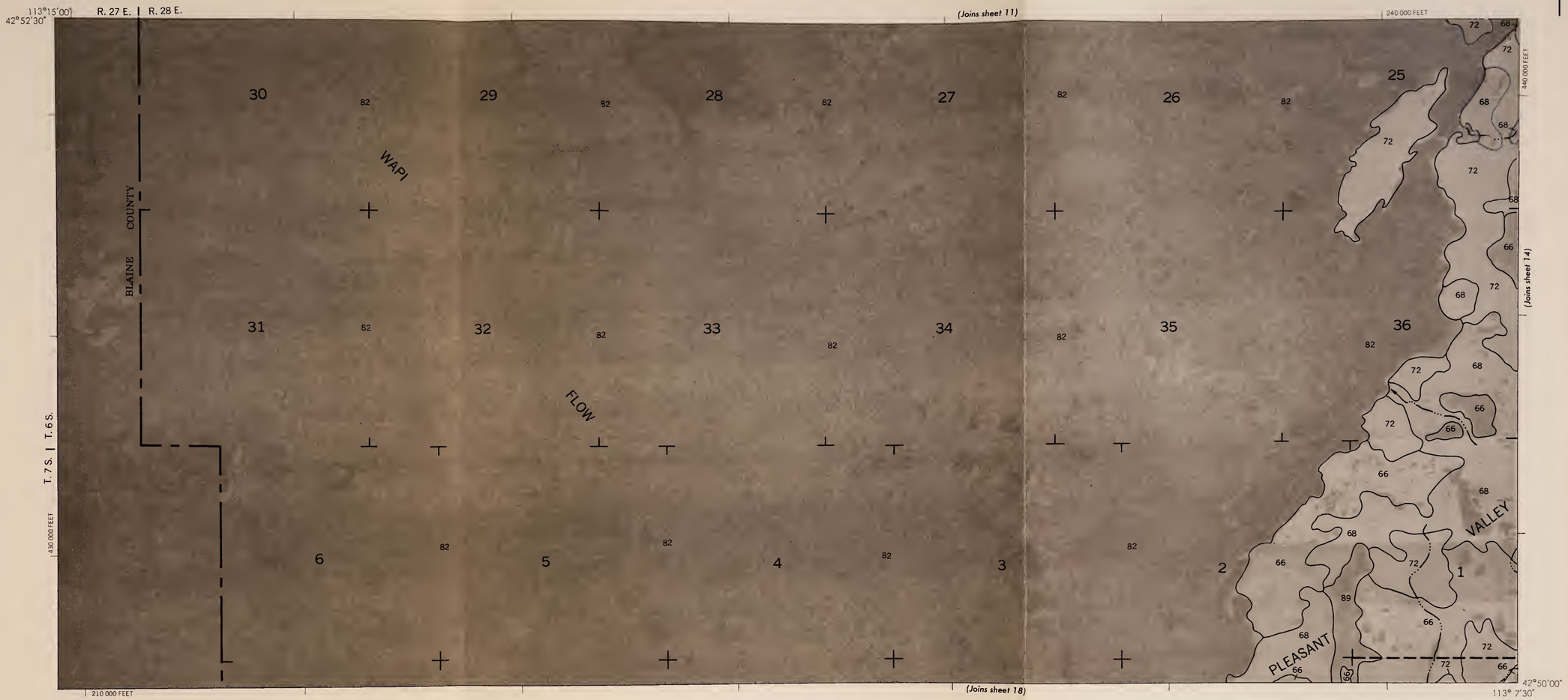


1 ¾ ½ ¼ 0 1 2 Miles

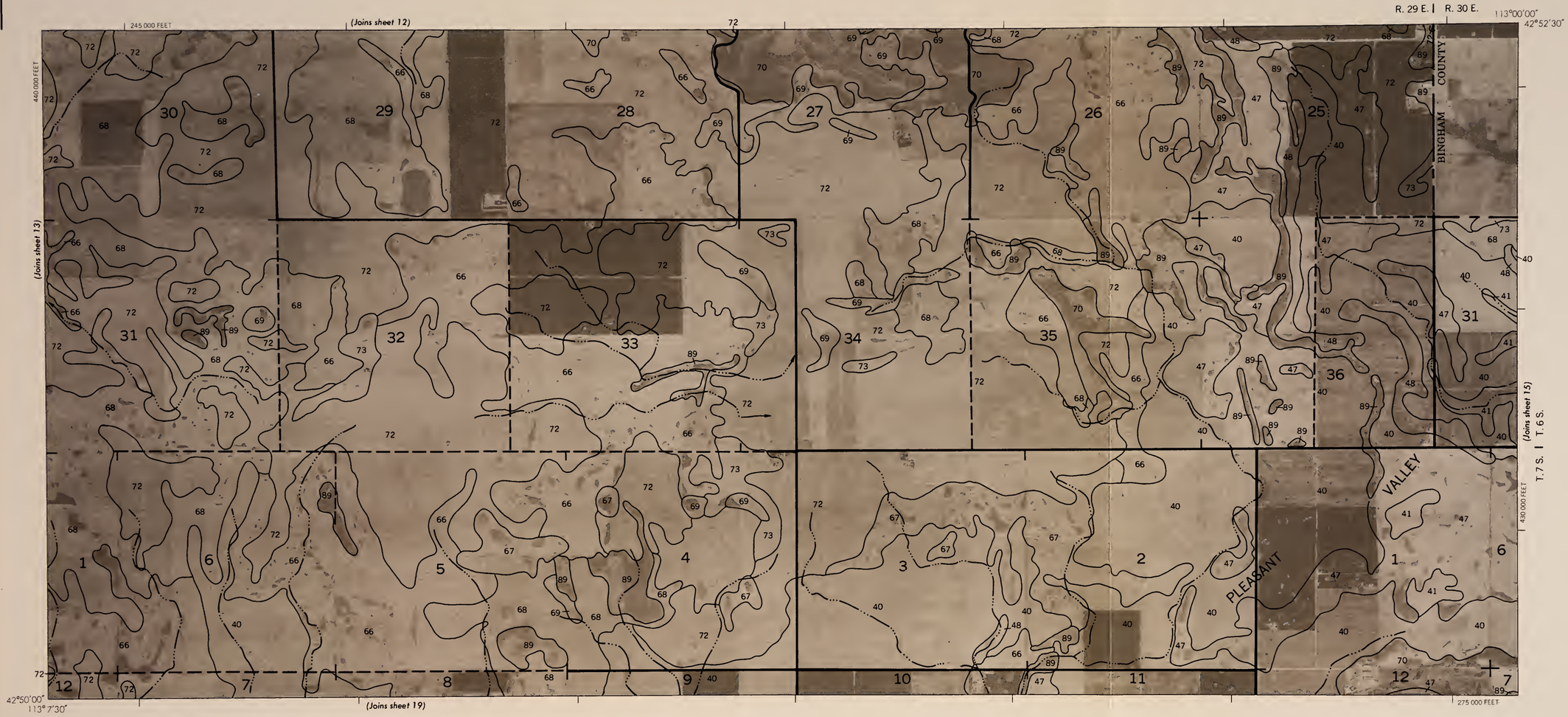
5000 4000 3000 2000 1000 0 Scale 1:24000 5000 10000 Feet

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 14



1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24 000

POWER COUNTY AREA, IDAHO — SHEET NUMBER 15

15

N

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey photobiography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 16

1 ¾ ½ ¼ 0 1 2 Miles

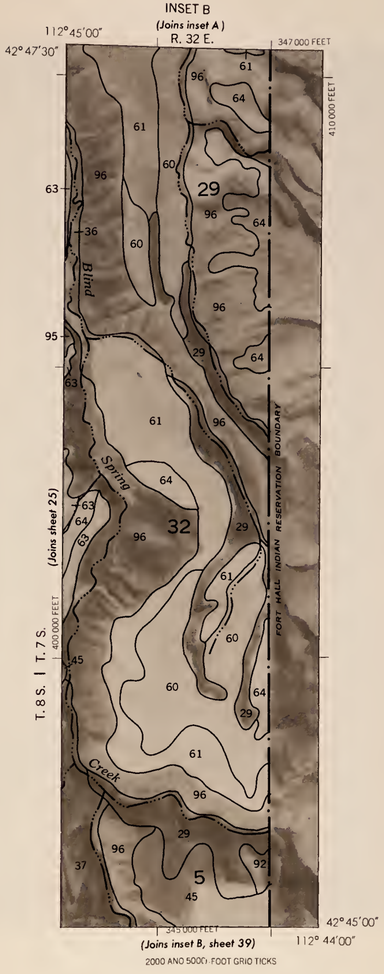
5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24000

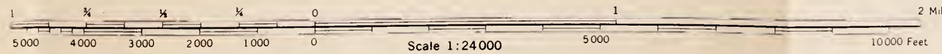
N

INSET A
(Joins lower left)

INSET B
(Joins inset A)



INSET C



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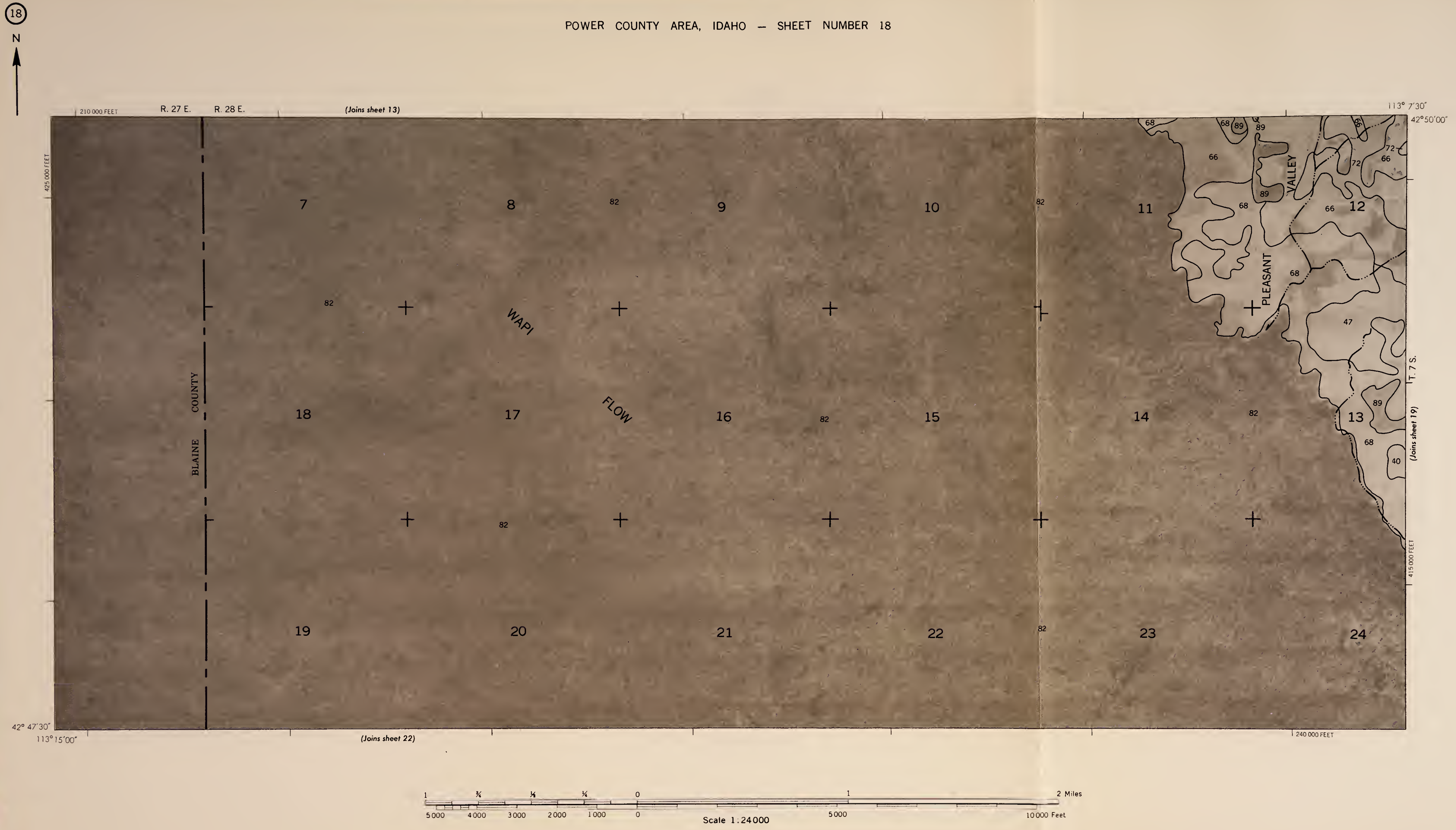

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned.
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1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

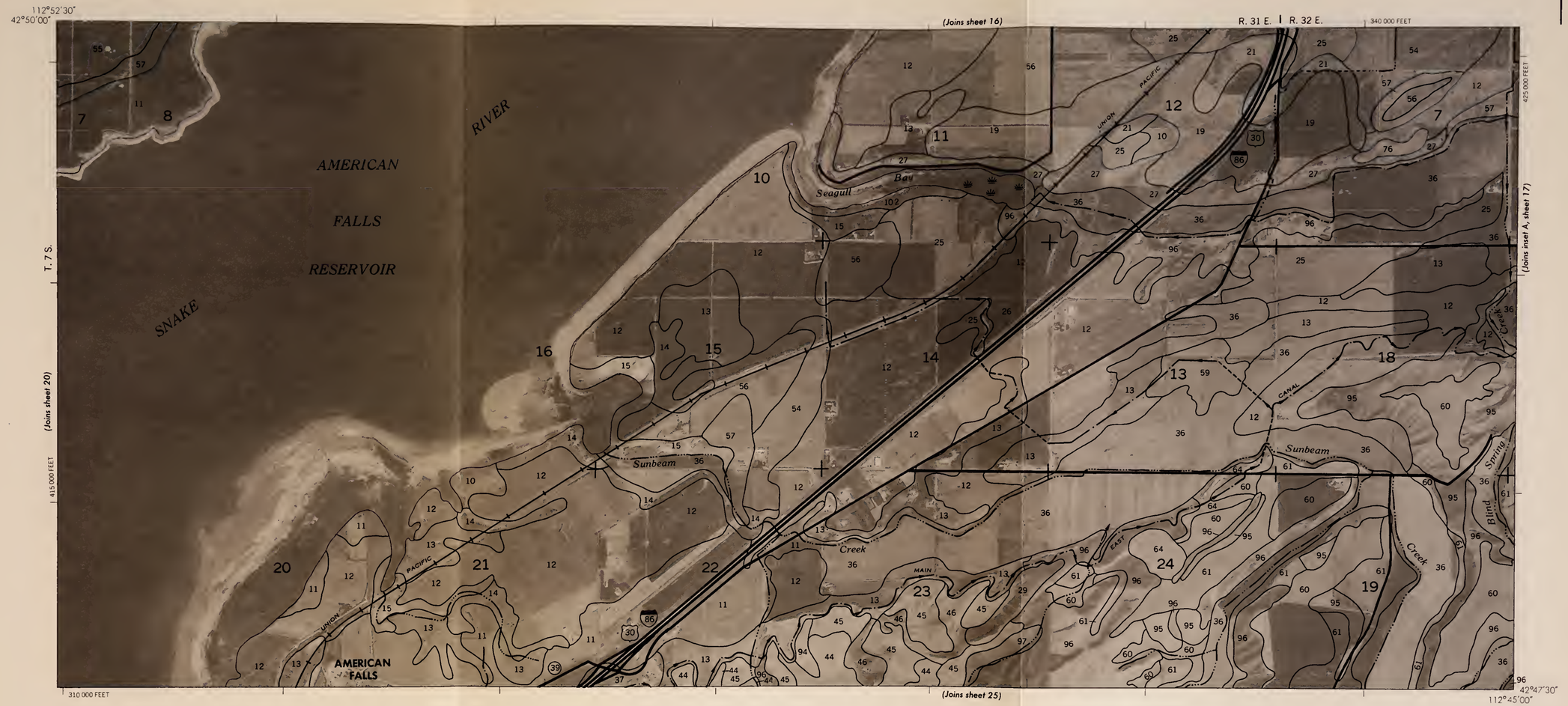
Scale 1:24000

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 20

2 Miles
1
¾ ½ ¼ 0
5000 4000 3000 2000 1000 0
5000
10000 Feet

Scale 1:24000



5,000 foot grid ticks based on state coordinate system, Land division corners, if shown, are approximately positioned
This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey photogeography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies
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5,000 foot grid ticks based on state coordinate system, Land division corners, if shown, are approximately positioned

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 22

Scale 1:24000

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

5 000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned.

The mapping was compiled in 1979 and 1980 by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.

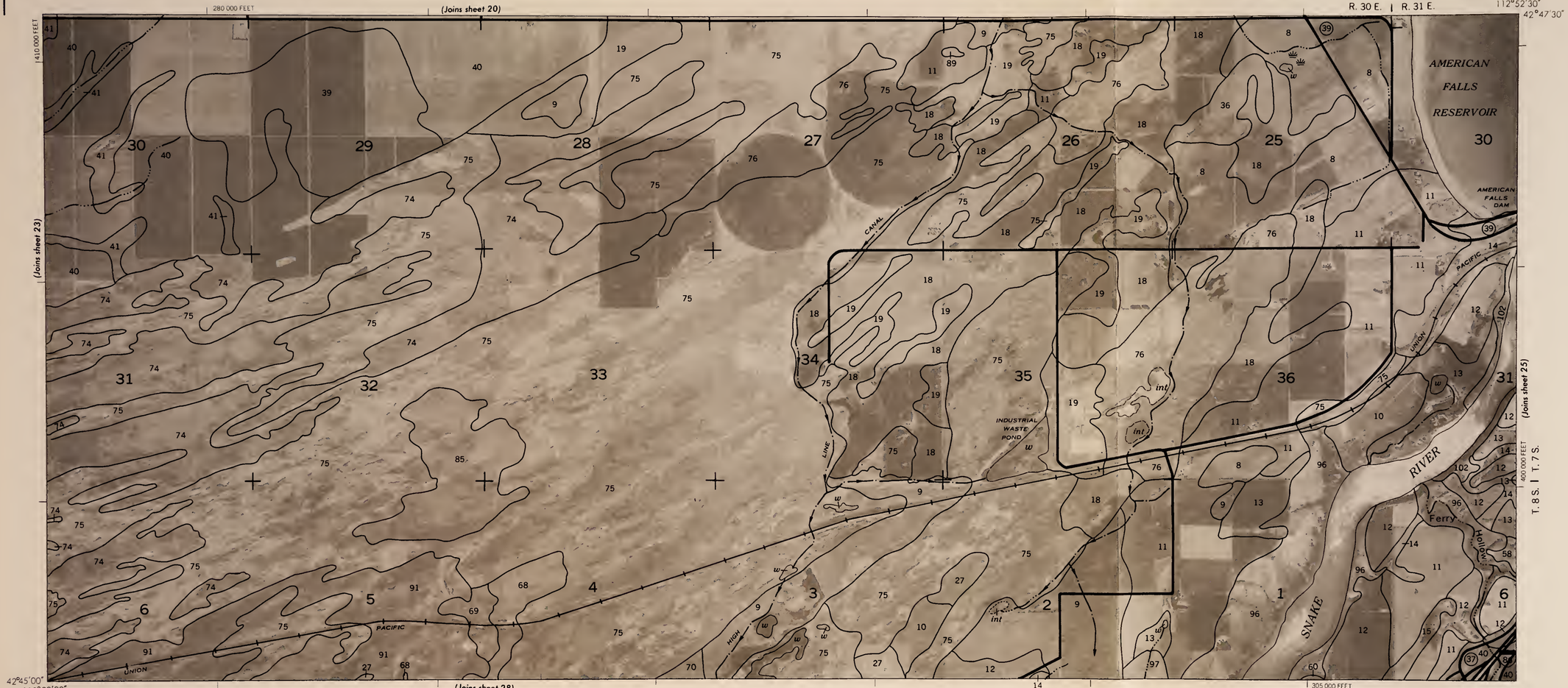
1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 24



1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10 000 Feet

Scale 1:24000

N

Scale 1:24000

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

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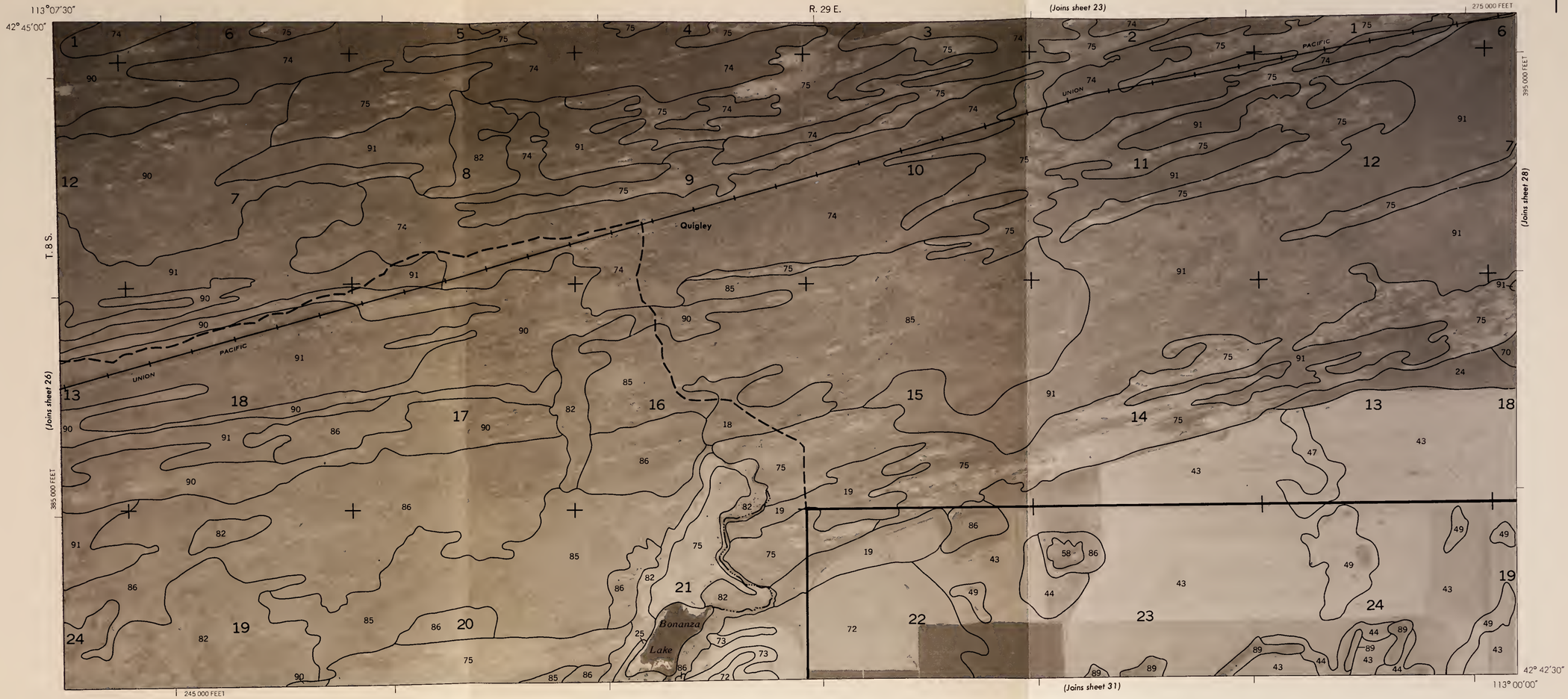
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24 000

POWER COUNTY AREA, IDAHO — SHEET NUMBER 27

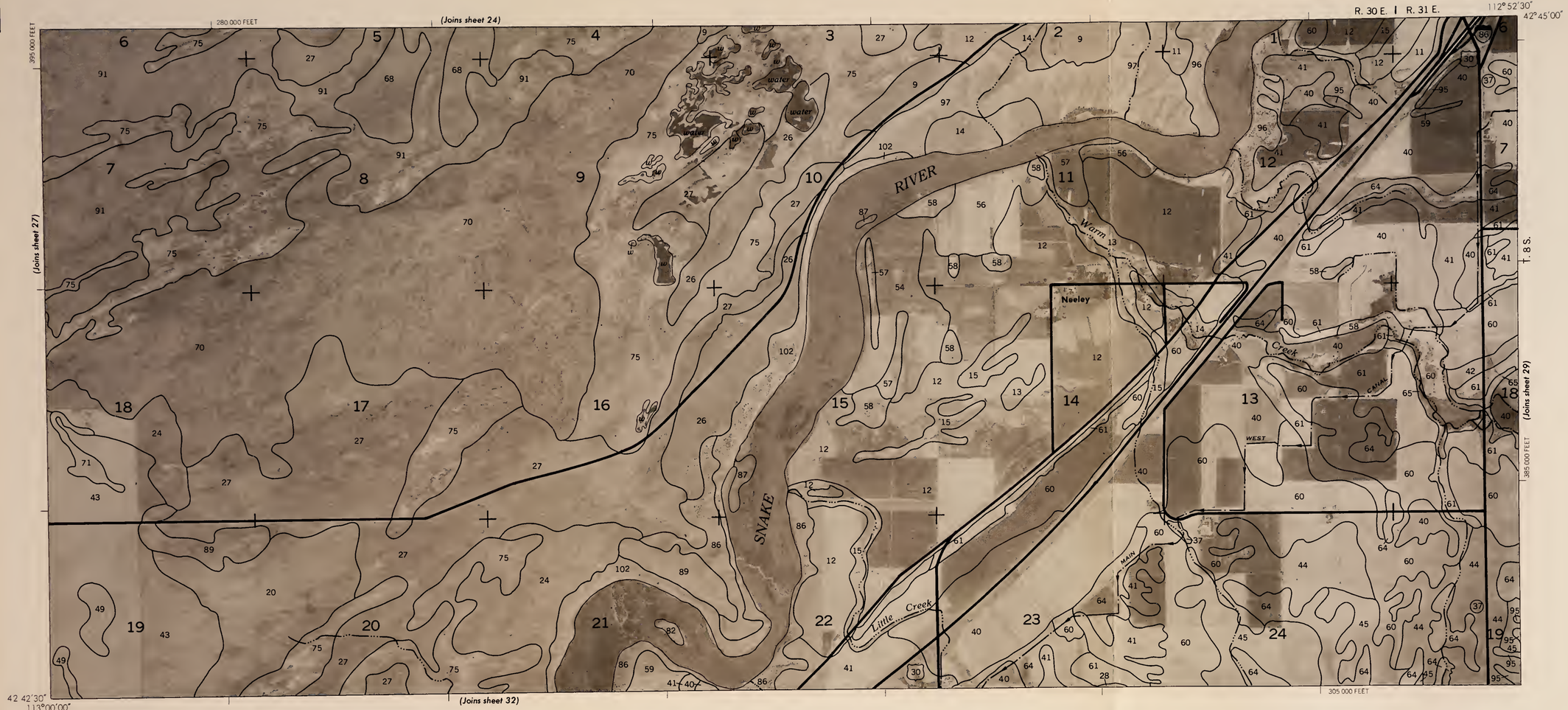


Scale 1:24000

5 000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

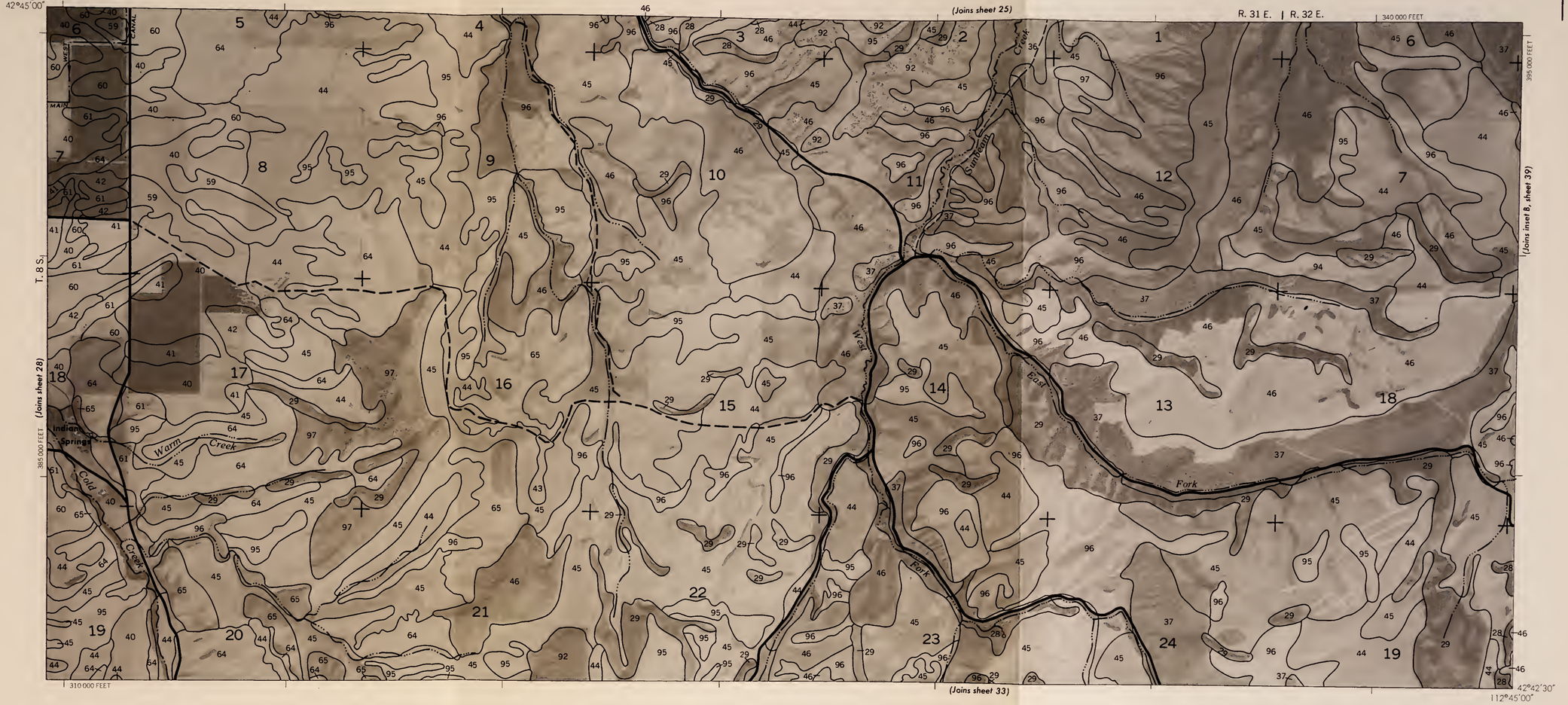
This map was compiled on 1975 and 1976 U.S. Department of The Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

POWER COUNTY AREA, IDAHO — SHEET NUMBER 28



Scale 1:24000

N



1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This map was compiled on 1975 aun 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

5 000 foot grid ticks based on state coordinate system Land division corners if shown are approximately positioned

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 30

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

POWER COUNTY AREA, IDAHO — SHEET NUMBER 31

31

N

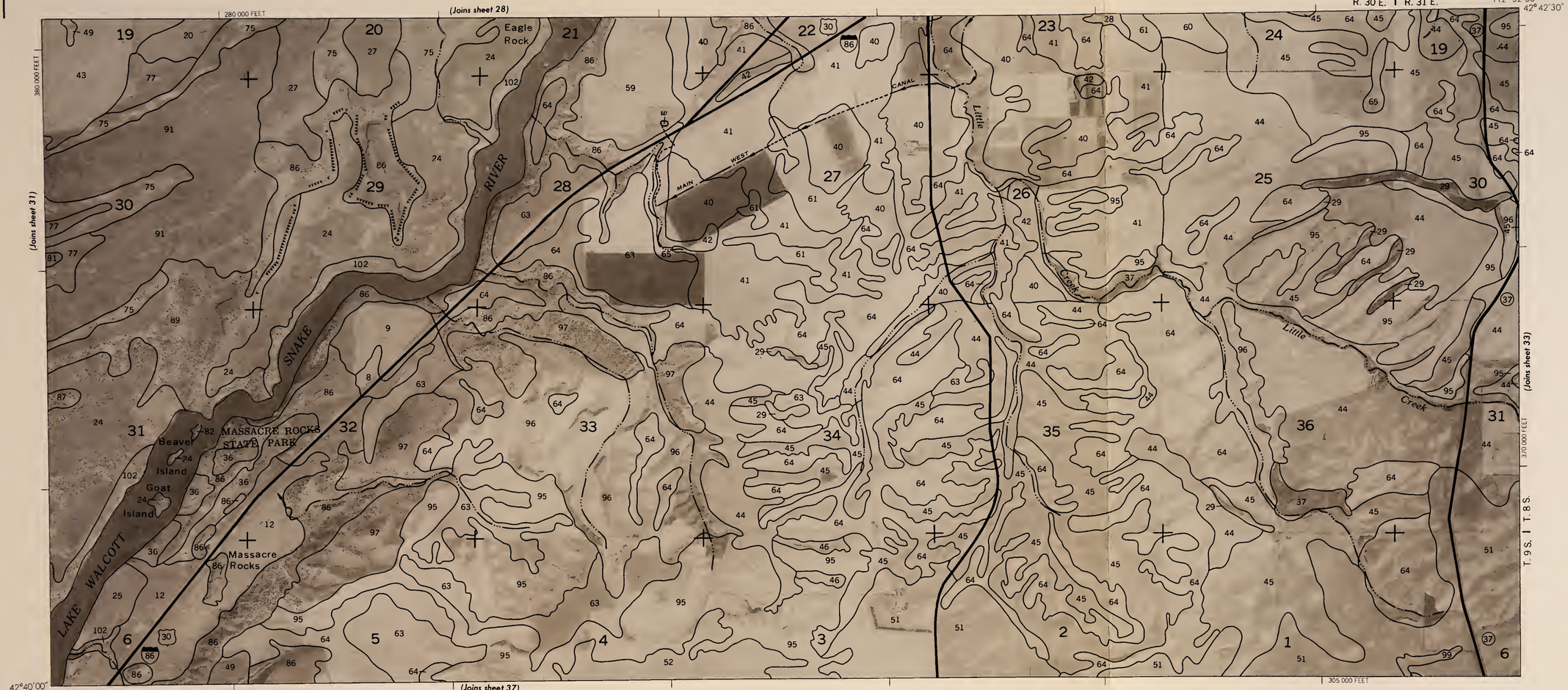
1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24000

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 32



1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 10000 Feet

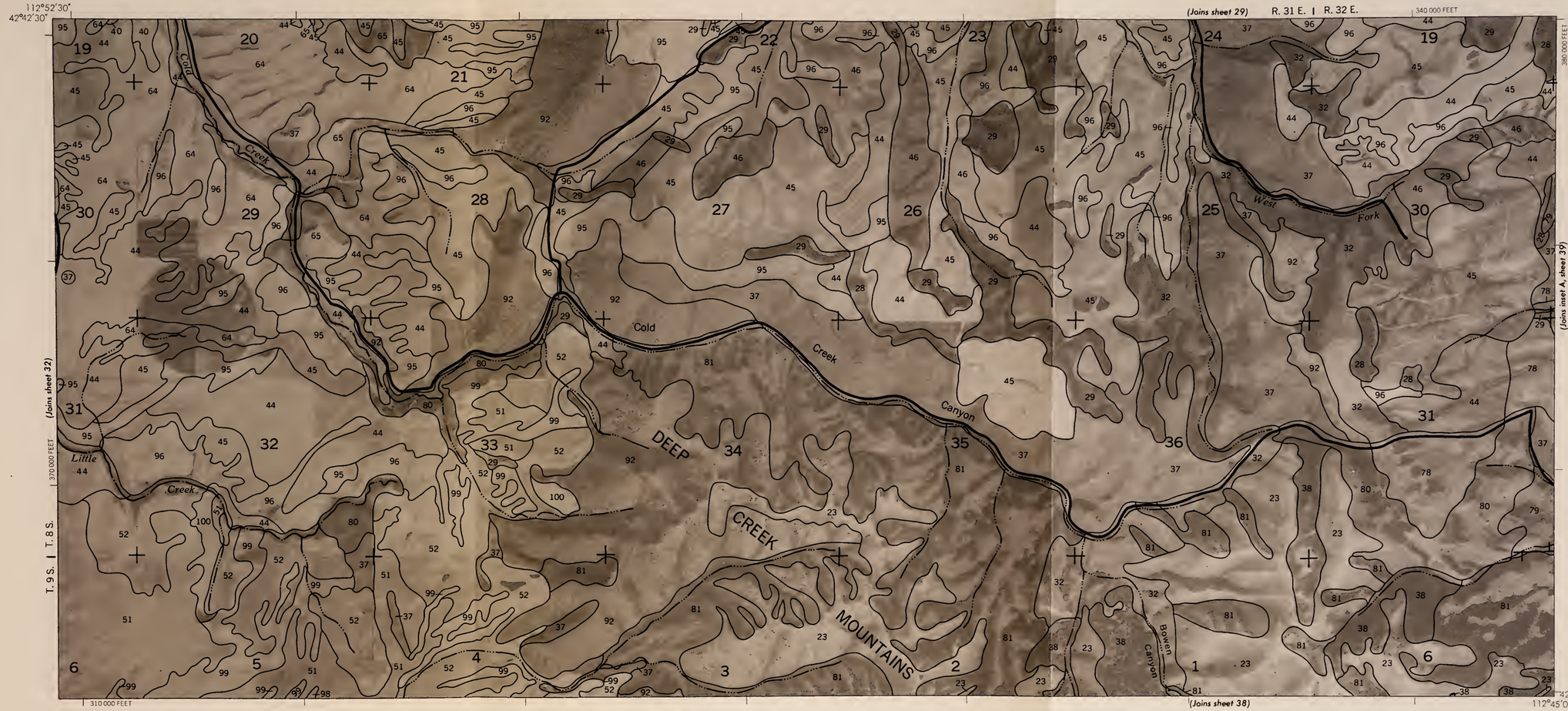
Scale 1:24000

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

1000 foot grid ticks based on state coordinate system 1 and division centers, if shown, are approximately positioned

This map was compiled on 1979 and 1376 U.S. Department of the Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

POWER COUNTY AREA, IDAHO — SHEET NUMBER 33



1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24 000

N

This map was compiled on 1975 and 1976 U.S. Department of The Interior Geological Survey photomosaics by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

This map was compiled on 1975 and 1976 U.S. Department of The Interior Geological Survey photomosaics by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

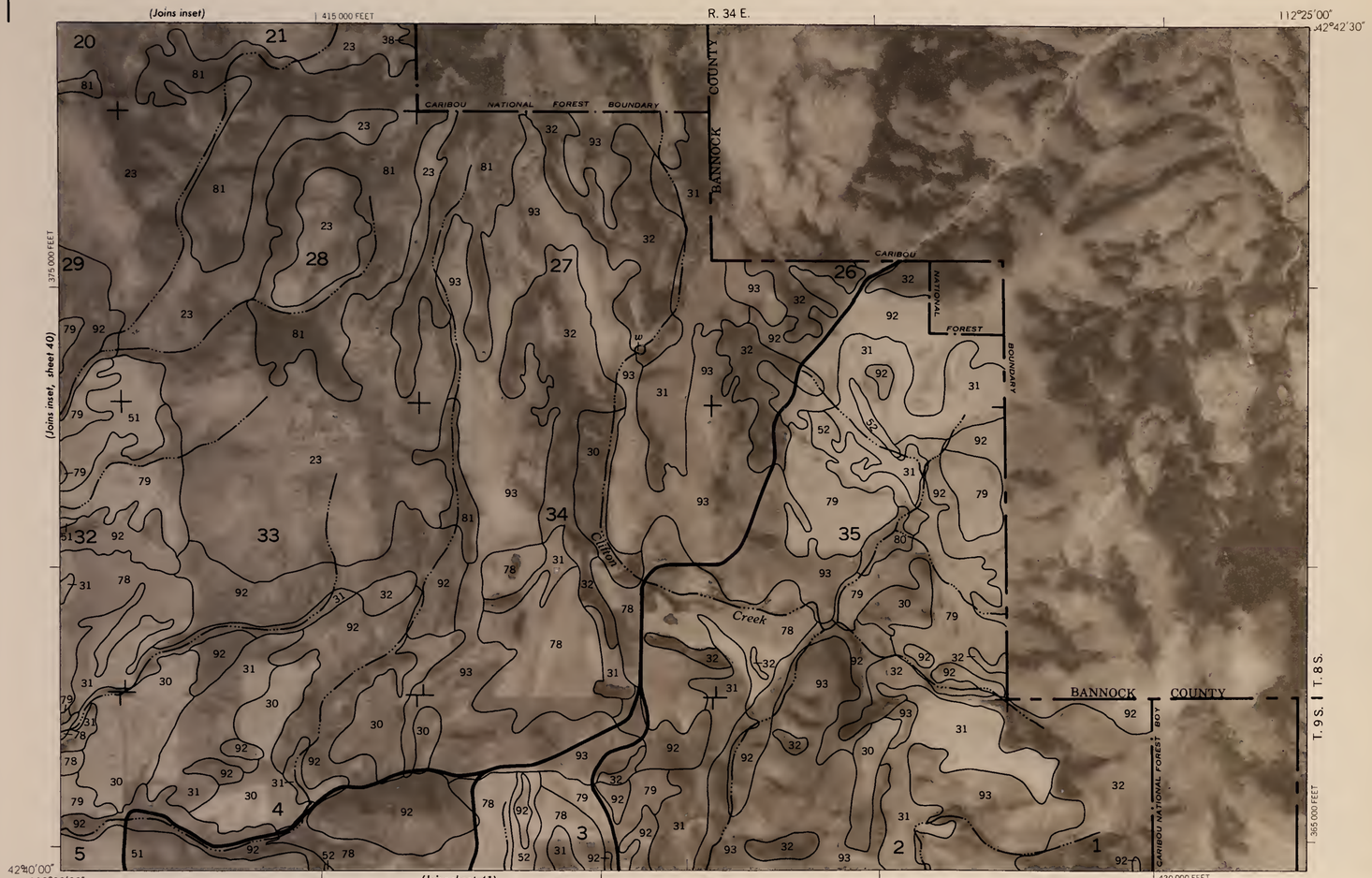
This map was compiled on 1975 and 1976 U.S. Department of The Interior Geological Survey photomosaics by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

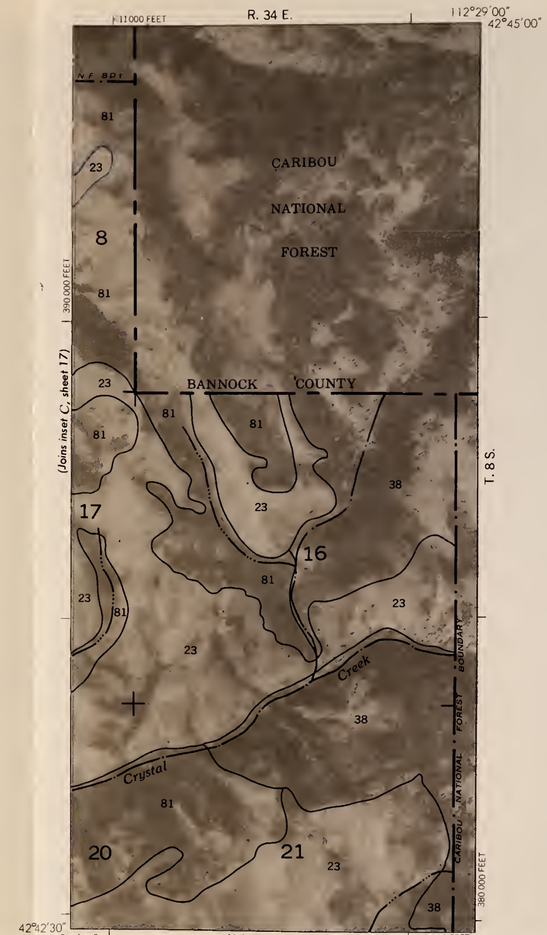
1,000-foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

(34)

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 34





1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This data was compiled on 1975 and 1976 U.S. Department of The Interior Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

This map was compiled on 1975 and 1976 U.S. Department of The Interior Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 35

35

N

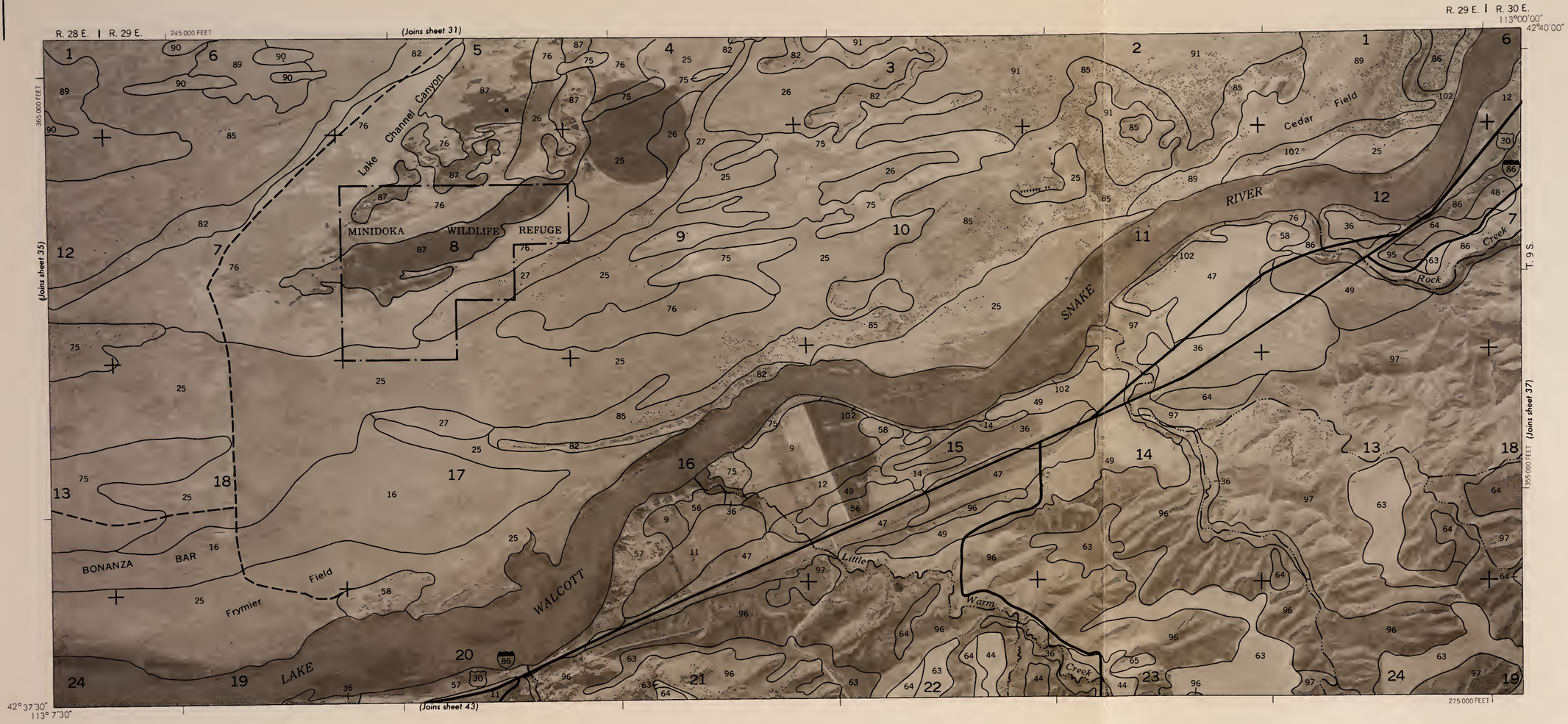
Scale 1:24000

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of The Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies



Scale 1:24000

2 Miles

10000 Feet

POWER COUNTY AREA, IDAHO — SHEET NUMBER 37

37

N

2 Miles

1 ¾ ½ ¼ 0 1

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey photomosaic by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

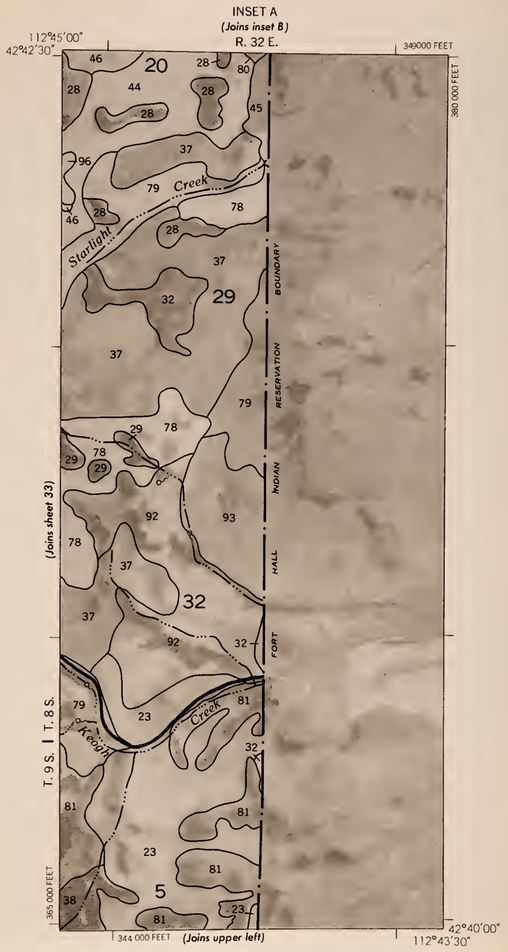
POWER COUNTY AREA, IDAHO — SHEET NUMBER 38

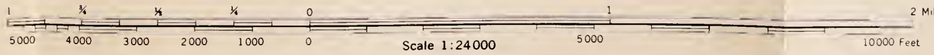
Scale 1:24000

1 2 Miles
5000 4000 3000 2000 1000 0 5000 10000 Feet

5000 foot grid ticks based on state coordinate system, land direction corners if shown are approximately positioned
This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

N

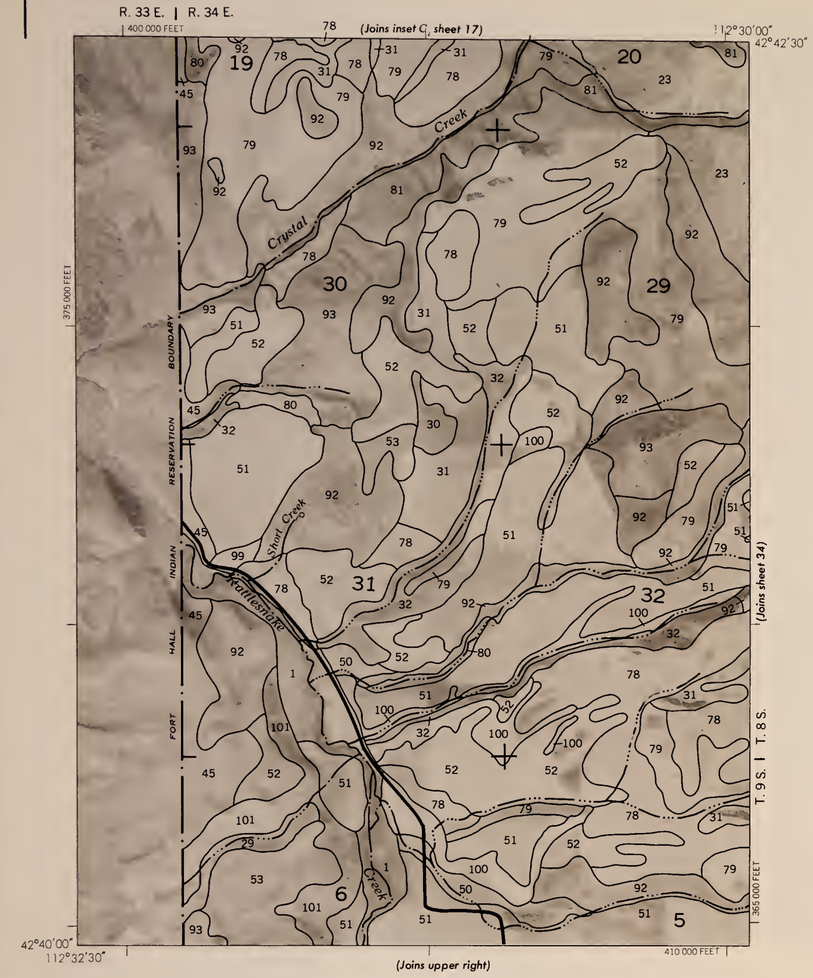


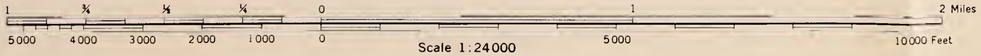


5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned





5,000 feet grid ticks based on state coordinate system. Land division corners shown are approximately positioned
This map was compiled on 1975 aerial photographs taken in 1976. U.S. Department of the Interior, Geological Survey and the United States Department of Agriculture, Soil Conservation Service, and cooperating agencies

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 42

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned.
This map was compiled on 1975 from 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies.

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
1000-foot grid ticks based on state coordinate system. Land division corners (+) shown are approximately positioned

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 44

1 ¾ ½ ¼ 0 1 2 Miles

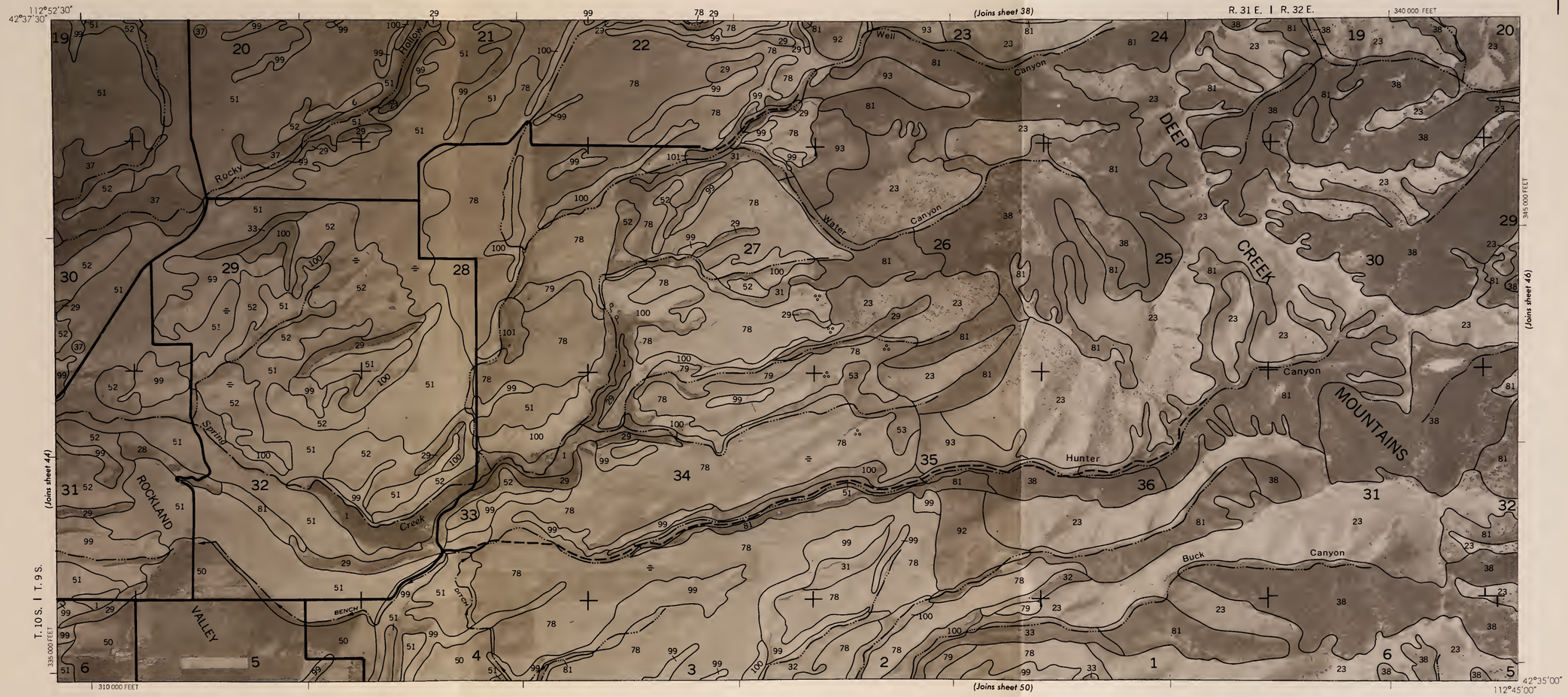
5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

POWER COUNTY AREA, IDAHO — SHEET NUMBER 45

45

N



Scale 1:24000

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 46

2 Miles 1 ¾ ½ ¼ 0 1

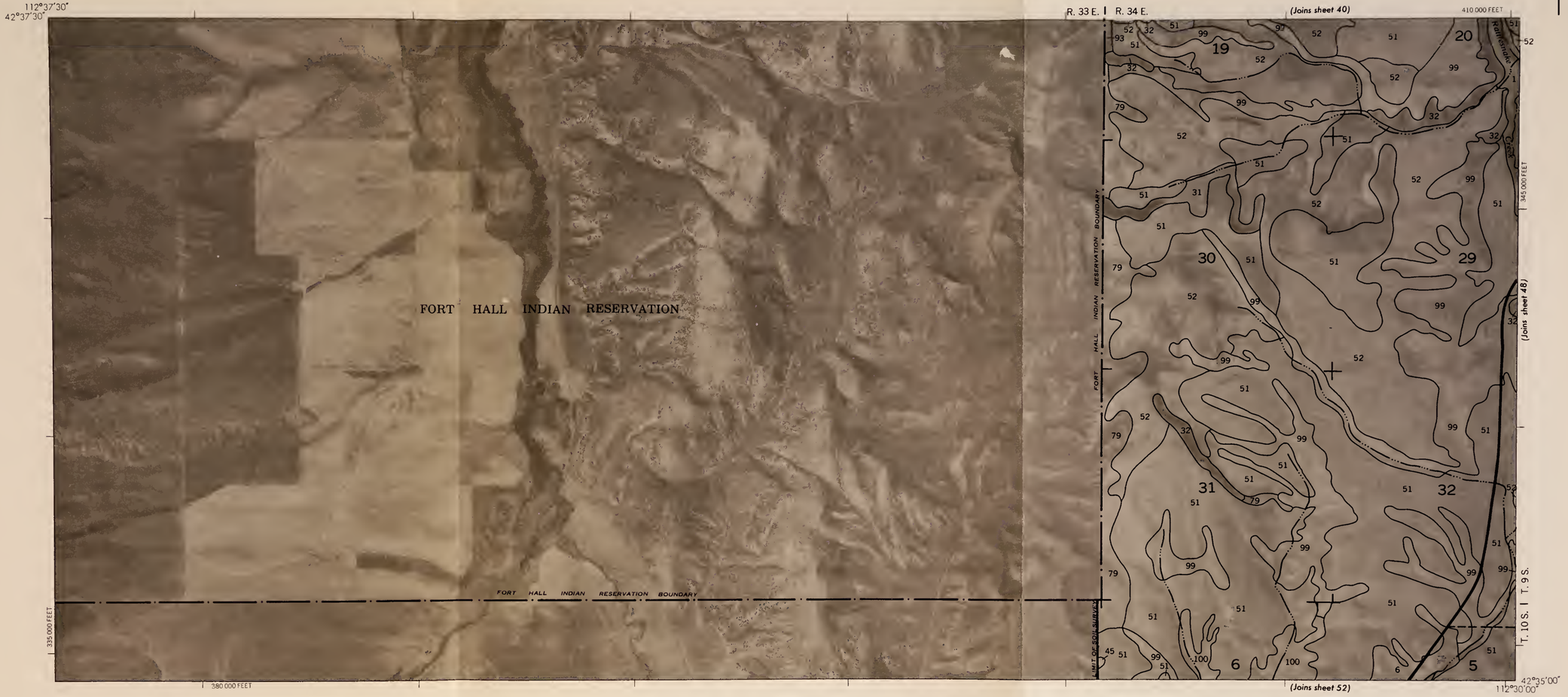
5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This map was compiled on 1915 aer. 1976 U.S. Department of the Interior, Geological Survey photobase by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

5 000 foot grid ticks based on state coordinate system 1 and division corners if shown. Are approximately positioned

N



1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24 000

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

5 000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

5 000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 48

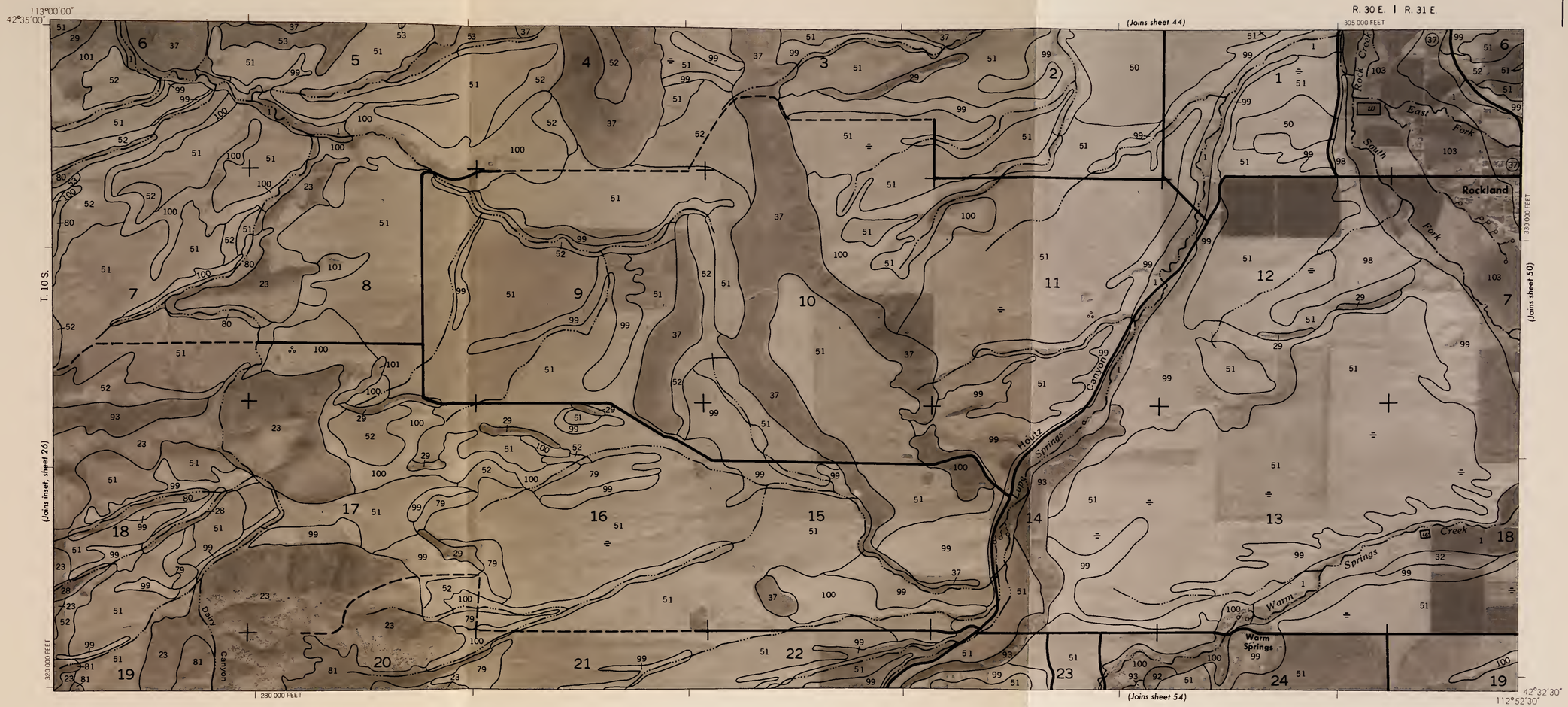
2 Miles 1 ¾ ½ ¼ 0 1

5000 4000 3000 2000 1000 0 5000 10 000 Feet

Scale 1:24 000

This map was compiled on 1975 soil data from U.S. Department of the Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

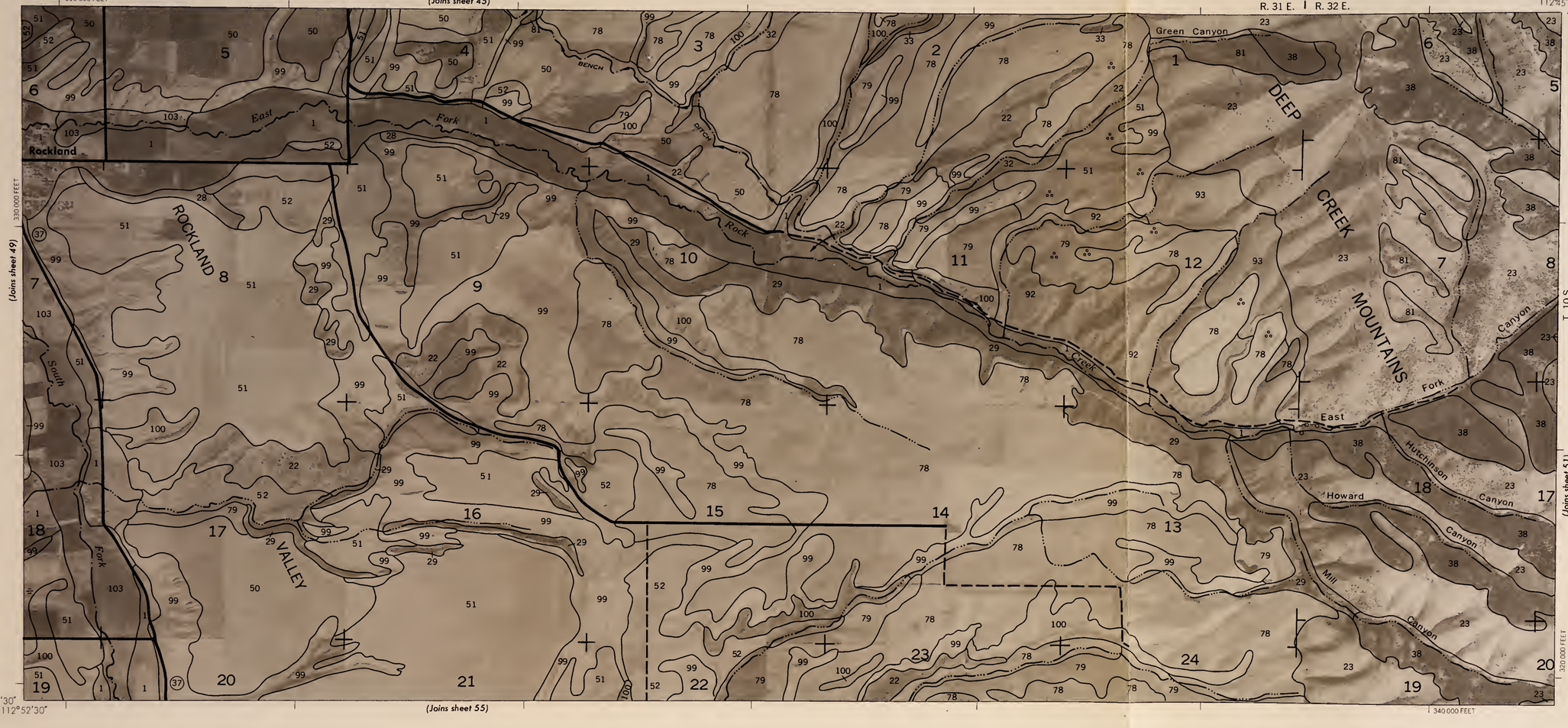
1,000-foot grid ticks based on State coordinate system. Land division corners, if shown, are approximately positioned


N
113°00'00"
42°35'00"
R. 30 E.
R. 31 E.
305 000 FEET
(Joins sheet 44)
T. 10 S.
(Joins inset, sheet 26)
(Joins sheet 50)
320 000 FEET
330 000 FEET
280 000 FEET
(Joins sheet 54)
42°32'30"
112°52'30"
Rockland
Warm Springs
Rock Creek
East Fork
South Fork
Houtz Canyon
Houtz Springs
Dairy Canyon
Warm Springs Creek
Scale 1:24000
2 Miles
10000 Feet
5000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned
This map was compiled on 1975 and 1976 U.S. Department of The Interior Geological Survey aerial photographs taken in 1974. The U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey, aerial photographs taken in 1974. The U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

50

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 50



1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

5 000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

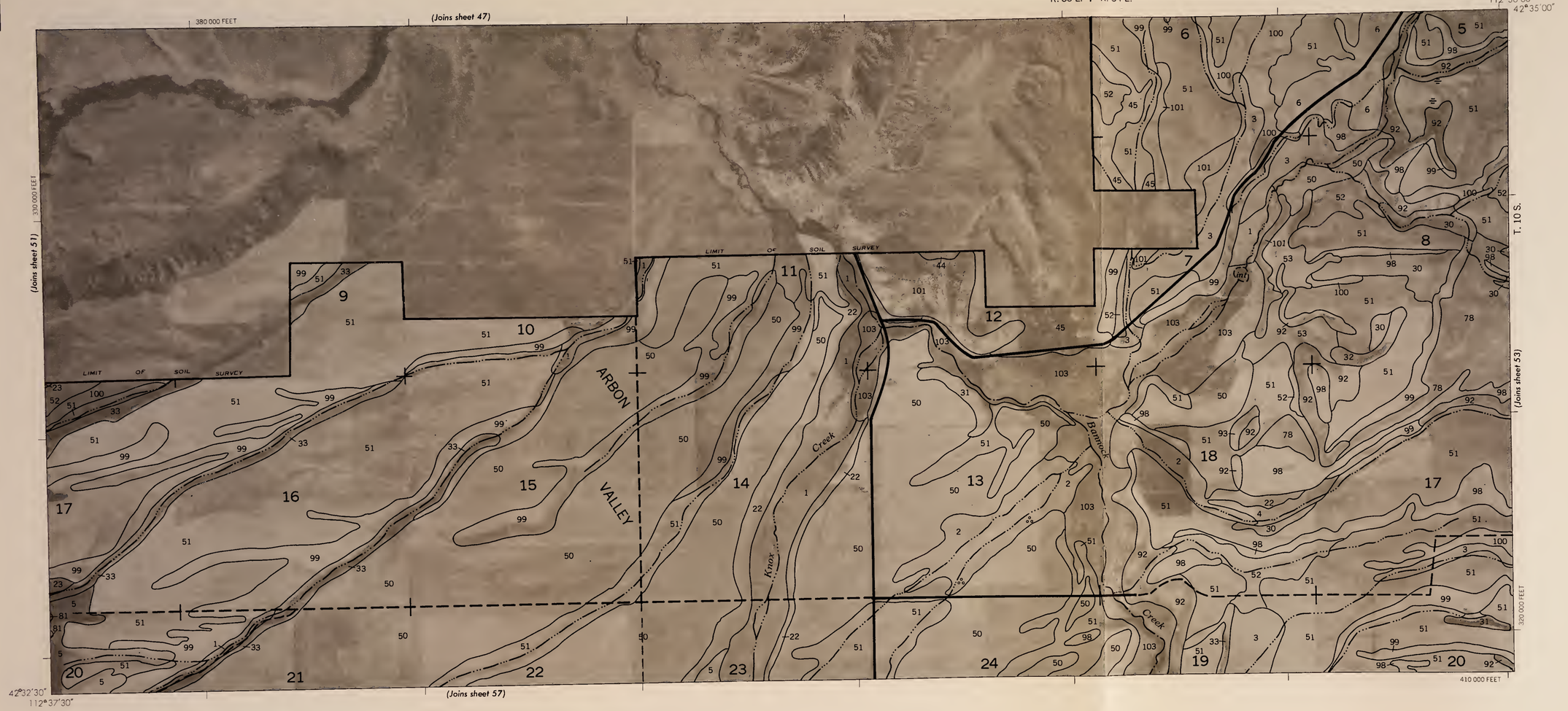
This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey, Topographic Division, Denver, Colorado

5 000 foot grid ticks based on state coordinate system. Land division corners if shown are approximately positioned
This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5 000 foot grid ticks based on state coordinate system. Land division corners if shown are approximately positioned

(52)

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 52



2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

5,000 foot grid ticks based on state coordinate system, Land divisions, if shown, are approximately positioned

This map was compiled on 1975 pro 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

POWER COUNTY AREA, IDAHO — SHEET NUMBER 53

53

N

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

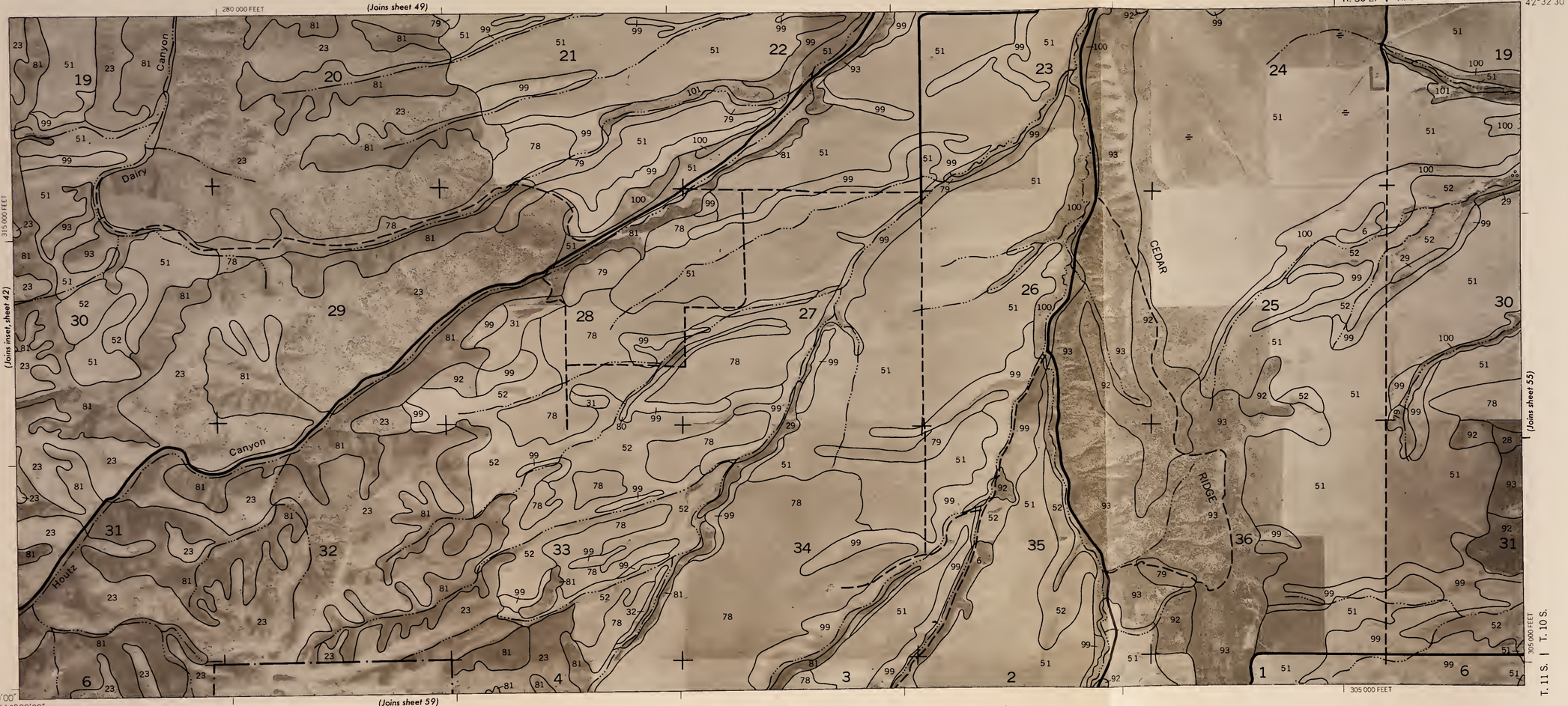
This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system Land division corners if shown are approximately positioned

54

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 54



Scale 1:24000

1000 foot grid ticks based on State coordinate system. Land division corners (+) shown are approximately positioned.

This map was compiled on 1979 Jan 1976 U.S. Department of the Interior Geological Survey photographs taken by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

N

2 Miles
1 ¾ ½ ¼ 0 1
5000 4000 3000 2000 1000 0 5000 10000 Feet
Scale 1:24000

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey photolithography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5 000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey photolithography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5 000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 56

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

5,000-foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned.

This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.

POWER COUNTY AREA, IDAHO — SHEET NUMBER 57

57

N

Scale 1:24000

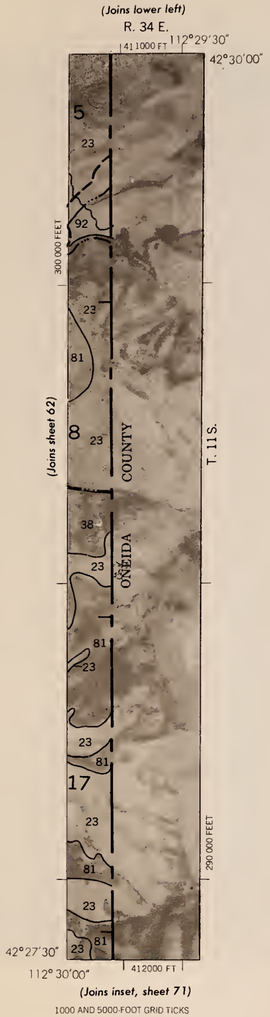
1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

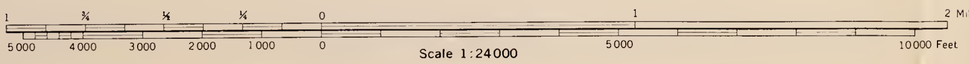
This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners in shown are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 58



1000 AND 5000-FOOT GRID TICKS



5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned.
This map was compiled on 1975 civil 1976 U.S. Department of the Interior Geological Survey photomosaic by the U.S. Department of Agriculture - Soil Conservation Service and cooperating agencies

POWER COUNTY AREA, IDAHO — SHEET NUMBER 59

59

N

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

1,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned
This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

60

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 60

Scale 1:24000

5000 4000 3000 2000 1000 0 5000 10000 Feet

1 ¾ ½ ¼ 0 1 2 Miles

This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey photography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

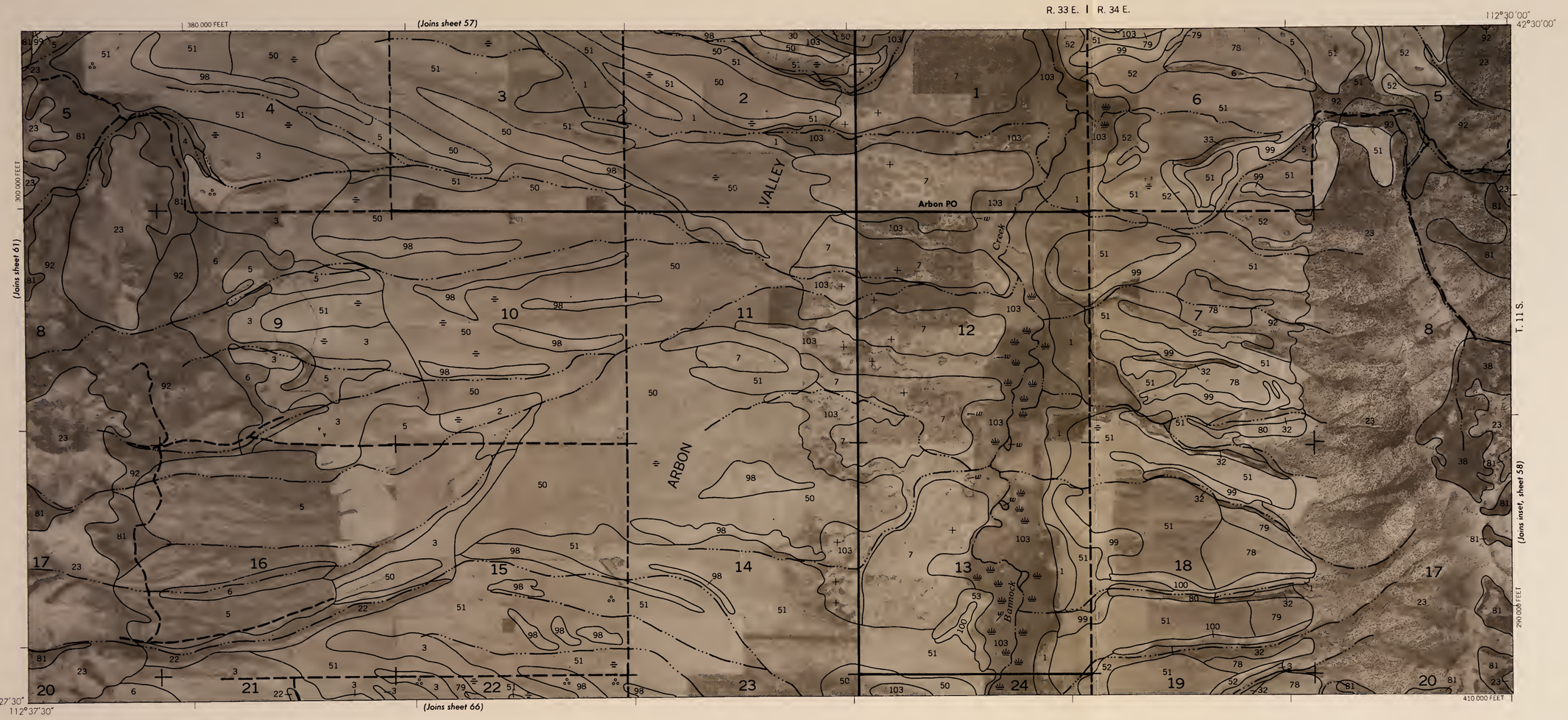
This map was compiled on 1975 and 1976 U.S. Department of The Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system Land division corners are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of The Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system Land division corners are approximately positioned

62

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 62



1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

1,000 foot grid ticks based on state coordinate system | land division corners if shown are approximately positioned

This map was compiled on 1979 per 1978 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

POWER COUNTY AREA, IDAHO — SHEET NUMBER 63

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5 000 foot grid ticks based on state coordinate system. Land division corners if shown are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5 000 foot grid ticks based on state coordinate system. Land division corners if shown are approximately positioned

113°00'00"
42°27'30"

R. 30 E. | R. 31 E.

305 000 FEET

(Joins sheet 59)

T. 11 S.

275 000 FEET

285 000 FEET

SAWTOOTH NATIONAL FOREST

MINIDOKA FOREST STATE BIRD SANCTUARY

SAWTOOTH NATIONAL FOREST BOUNDARY

Flint Canyon

Red Ledge Canyon

Hartley Canyon

Side Canyon

23 24 19 26 25 30 36 35 31

(Joins sheet 64)

(Joins sheet 67)

42°25'00"
112°52'30"

N

Scale 1:24000

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 64

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

This map was compiled on 1975 1000 foot grid ties based on state coordinate system. Land division corners, if shown, are approximately positioned. 1976 U.S. Department of the Interior, Geological Survey, in cooperation with the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

N

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system Land division corners if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system Land division corners if shown, are approximately positioned

112°45'00"
42°27'30"

(Joins sheet 61)

R. 32 E. | R. 33 E.

375 000 FEET

T. 11 S.

(Joins sheet 64)

MOUNTAINS

CREEK

DEEP

Bull Canyon

Bull Canyon

285 000 FEET

(Joins sheet 66)

275 000 FEET

345 000 FEET

(Joins sheet 69)

42°25'00"
112°37'30"

1 ¾ ½ ¼ 0 1 2 Miles

5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24 000

POWER COUNTY AREA, IDAHO — SHEET NUMBER 66

N

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

5 000 foot grid ticks based on state coordinate system. Land division corners + shown are approximately positioned.
This map was compiled on 1973 and 1976 U.S. Department of The Interior, Geological Survey, orthophotographs by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies

N

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

68

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 68

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

5,000 foot grid ticks based on state coordinate system Land division corners - if shown - are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

Scale 1:24000

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners if shown are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior Geological Survey orthophotography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies

70

N

POWER COUNTY AREA, IDAHO — SHEET NUMBER 70

1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

5 000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned.

This map was compiled on 1975 aerial photography by the U.S. Department of Agriculture - Soil Conservation Service and cooperating agencies

POWER COUNTY AREA, IDAHO — SHEET NUMBER 71

1000 AND 5000-FOOT GRID TICKS

1 ¾ ½ ¼ 0 1 2 Miles

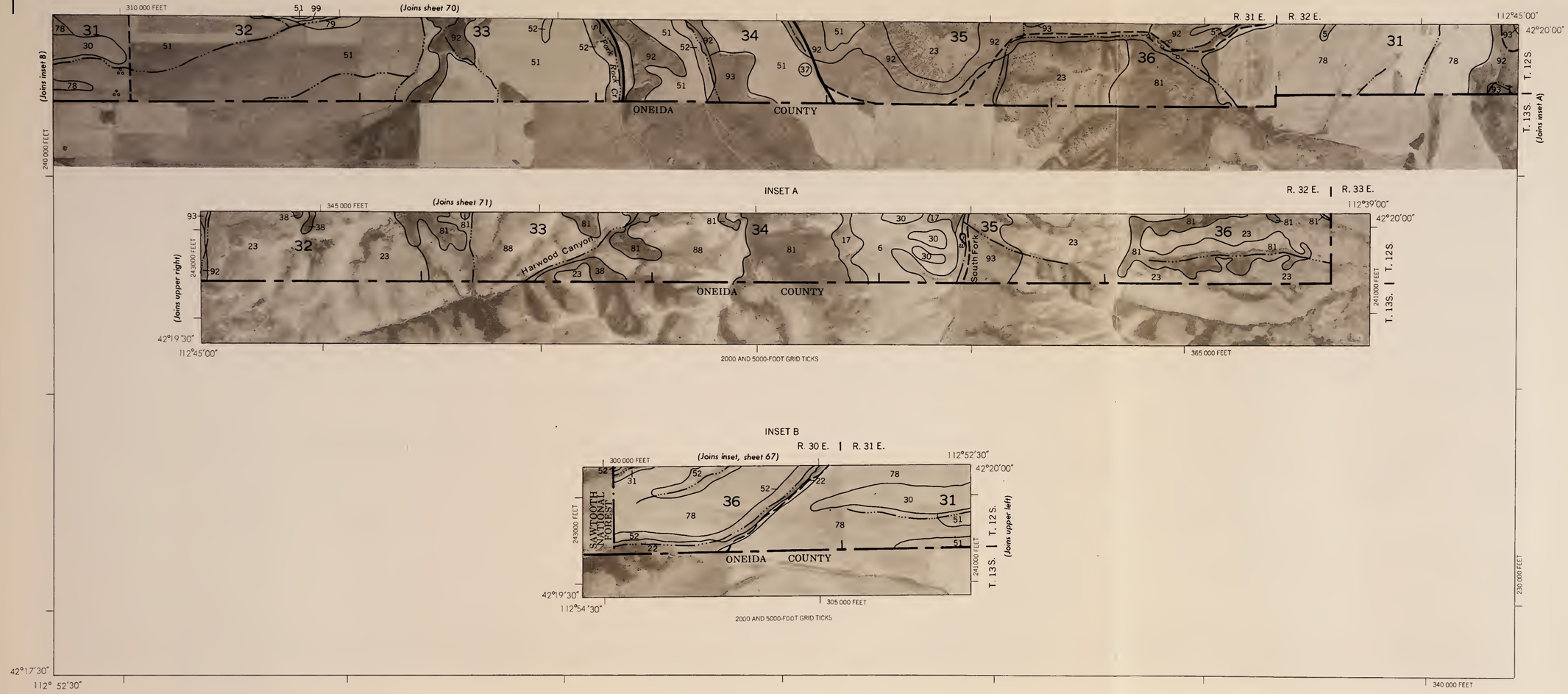
5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

Scale 1:24 000

This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

This map was compiled on 1975 and 1976 U.S. Department of the Interior, Geological Survey orthophotography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies
5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO — SHEET NUMBER 72



1 ¾ ½ ¼ 0 1 2 Miles

5000 4000 3000 2000 1000 0 5000 10000 Feet

Scale 1:24000

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5,000 foot grid ticks based on state coordinate system. Land division corners, if shown, are approximately positioned

POWER COUNTY AREA, IDAHO

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool (Davis Airstrip; Flood Pool Line)

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Poor motor road

RDAD EMBLEMS & DESIGNATIONS

- Interstate (79)
- Federal (410)
- State (52)
- County, farm or ranch (378)

RAILRDAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small (water; w)

PITS

- Gravel pit (G.P.)
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) (Indian Mound)
- Located object (label) (Tower)
- Tank (label) (GAS)
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) (CANAL)
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVDIRS

- Perennial (water; w)
- Intermittent (int; i)

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SDIL DELINEATIONS AND SYMBOLS (SvE 107)

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSIDN OR SINK

SDIL SAMPLE SITE (normally not shown)

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

SOIL LEGEND

SYMBOL	NAME
1	Ammon silt loam, 0 to 3 percent slopes
2	Arbone loam, 0 to 4 percent slopes
3	Arbone loam, 4 to 12 percent slopes
4	Arbone loam, 12 to 20 percent slopes
5	Arbone-Hondoho association, rolling*
6	Arbone-Hondoho association, hilly*
7	Arbone Variant silt loam, 0 to 4 percent slopes
8	Declo fine sandy loam, 0 to 2 percent slopes
9	Declo fine sandy loam, 2 to 4 percent slopes
10	Declo fine sandy loam, 4 to 8 percent slopes
11	Declo loam, 0 to 2 percent slopes
12	Declo loam, 2 to 4 percent slopes
13	Declo loam, 4 to 8 percent slopes
14	Declo loam, 8 to 12 percent slopes
15	Declo loam, 12 to 20 percent slopes
16	Declo Variant bouldery loam, 2 to 4 percent slopes
17	Dranyon-Ricrest association, steep*
18	Feltham loamy sand, 0 to 2 percent slopes
19	Feltham loamy sand, 2 to 4 percent slopes
20	Feltham loamy sand, 4 to 8 percent slopes
21	Feltham loamy sand, 8 to 12 percent slopes
22	Hondoho-Arbone complex, steep*
23	Hymas-Wahtigup-Ridgecrest complex, very steep*
24	Kecko-Clems-Vining association, undulating*
25	Kecko-Escalante complex, 2 to 4 percent slopes
26	Kecko-Escalante complex, 4 to 8 percent slopes
27	Kecko-Escalante complex, 8 to 12 percent slopes
28	Kucera silt loam, steep*
29	Kucera silt loam, very steep*
30	Lanoak silt loam, 4 to 12 percent slopes
31	Lanoak silt loam, 12 to 20 percent slopes
32	Lanoak silt loam, 20 to 30 percent slopes
33	Lanoak silt loam, 30 to 45 percent slopes
34	Manila-Dranyon association, hilly*
35	McCarey-Rock outcrop complex, undulating*
36	McDole-Parehat complex, 0 to 3 percent slopes
37	Mike extremely stony silt loam, steep*
38	Moohoo-Pavohroo complex, very steep*
39	Neeley silt loam, 0 to 2 percent slopes
40	Neeley silt loam, 2 to 4 percent slopes
41	Neeley silt loam, 4 to 8 percent slopes
42	Neeley silt loam, 8 to 12 percent slopes
43	Neeley silt loam, 0 to 4 percent slopes*
44	Neeley silt loam, 4 to 12 percent slopes*
45	Neeley silt loam, 12 to 20 percent slopes*
46	Neeley silt loam, 20 to 30 percent slopes*
47	Neeley-Neeley Variant complex, 2 to 4 percent slopes
48	Neeley-Neeley Variant complex, 4 to 8 percent slopes
49	Neeley-Neeley Variant complex, 8 to 12 percent slopes
50	Newdale silt loam, 0 to 4 percent slopes
51	Newdale silt loam, 4 to 12 percent slopes
52	Newdale silt loam, 12 to 20 percent slopes
53	Newdale silt loam, 20 to 30 percent slopes
54	Paniogue sandy loam, 2 to 4 percent slopes
55	Paniogue loam, 0 to 2 percent slopes
56	Paniogue loam, 2 to 4 percent slopes
57	Paniogue complex, 4 to 12 percent slopes
58	Pits*
59	Pocatello silt loam, 2 to 4 percent slopes
60	Pocatello silt loam, 4 to 8 percent slopes
61	Pocatello silt loam, 8 to 12 percent slopes
62	Pocatello silt loam, 0 to 4 percent slopes*
63	Pocatello silt loam, 4 to 12 percent slopes*
64	Pocatello silt loam, 12 to 20 percent slopes*
65	Pocatello silt loam, 20 to 30 percent slopes*
66	Portino stony loam, 2 to 4 percent slopes
67	Portino stony loam, 4 to 8 percent slopes
68	Portino silt loam, 2 to 4 percent slopes
69	Portino silt loam, 4 to 8 percent slopes
70	Portino-Trevino-Rock outcrop complex, rolling*
71	Portneuf silt loam, bedrock substratum, 0 to 2 percent slopes
72	Portneuf silt loam, bedrock substratum, 2 to 4 percent slopes
73	Portneuf silt loam, bedrock substratum, 4 to 8 percent slopes
74	Portneuf-Quincy complex, rolling*
75	Quincy fine sand, rolling*
76	Quincy loamy fine sand, 4 to 12 percent slopes
77	Quincy-Declo-Vining association, rolling*
78	Rexburg silt loam, 4 to 12 percent slopes
79	Rexburg silt loam, 12 to 20 percent slopes
80	Rexburg silt loam, 20 to 30 percent slopes
81	Ricrest-Ridgecrest complex, very steep*
82	Rock outcrop*
83	Rock outcrop-Tenno complex, rolling*
84	Rock outcrop-Tenno complex, very steep*
85	Rock outcrop-Trevino-Portino complex, rolling*
86	Rock outcrop and Torriorthents*
87	Schodson fine sandy loam, 0 to 3 percent slopes
88	Sheege-Pavohroo association, very steep*
89	Trevino-Portino-Rock outcrop complex, rolling*
90	Vining-Quincy-Rock outcrop complex, undulating*
91	Vining-Wapi-Rock outcrop complex, undulating*
92	Wahtigup-Hondoho complex, steep*
93	Wahtigup-Hondoho complex, very steep*
94	Wheeler silt loam, 4 to 12 percent slopes
95	Wheeler silt loam, 12 to 20 percent slopes
96	Wheeler silt loam, 20 to 30 percent slopes
97	Wheeler silt loam, 30 to 60 percent slopes
98	Wheelerville silt loam, 4 to 12 percent slopes
99	Wheelerville silt loam, 12 to 20 percent slopes
100	Wheelerville silt loam, 20 to 30 percent slopes
101	Wheelerville silt loam, 30 to 60 percent slopes
102	Xerollic Calciorthids, steep*
103	Zunhall silt loam, 0 to 3 percent slopes

*Broadly defined units.

INDEX TO MAP SHEETS

POWER COUNTY AREA, IDAHO

Scale 1: 380,160

1 0 1 2 3 4 5 Miles